The IHL Youth Action Campaign Training – Coordinator's Presentation Guide

Icons Used In this Guide

	**Coordinator's Notes –** This icon signifies what Coordinators should know about presenting the slide and any important steps that need to be taken.
	**Say –** This icon indicates what can be said during the presentation. Use it as a guide but do not feel that you need to read or describe the information exactly as is in the notes.
	**Activity –** This icon indicates that there is an activity. Follow the instructions outlined to conduct the activity.
	**Optional Content –** This icon represents optional questions, comments or activities for the slide. Use your discretion in what you wish to include.
	**Module time –** This icon represents the total time the module will take. It is always placed on the first slide of a new module.

Handbook page X **Space Law and Armed Conflict** **X min**

Coordinator's Notes:

Welcome to the themed module, which focuses on Space Law and Armed Conflict. This module, including the three case studies, should take no more than 60 minutes to complete (however, advocates are encouraged to take all the time they need). We have suggested you introduce each case study and have the advocates discuss its associated questions. They may complete the simulation at the end if time allows or on their own. Alternatively, you can have them complete the activity in advance or later as a separate YAC event.

Notes:

This module should take no more than **60 minutes** to complete.

Module 3 Objectives:

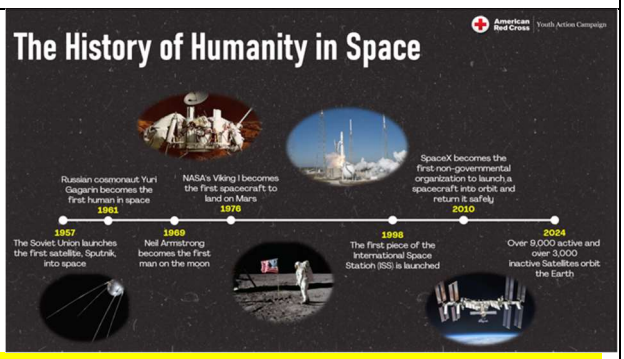
- Learn about the special theme: Space Law and Armed Conflict
- Apply the 4 principles of IHL to this special theme
- Learn about how previous YAC special themes, environmental protections in armed conflict and international corporate responsibility, relate to armed conflict in space

Say*:*

Introductions! This year's Youth Action Campaign theme is space law and armed conflict.

Handbook page X	Space Law and Armed Conflict	**1 min**

Coordinator Notes:



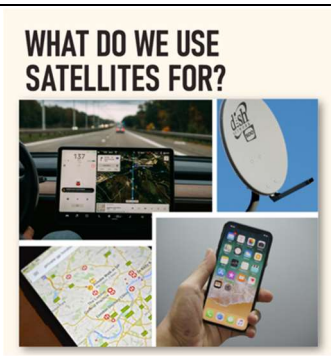
Say:

We will begin with a brief overview of humanity in space. Some of you might recall that the "space race" began when the USSR launched Sputnik I, the world's first satellite. Four years later, the USSR successfully launched the first man, Yuri Gagarin, into space. In 1969, of course, American astronaut Neil Armstrong became the first man on the moon. In 1976, mankind branched out to other planets when NASA's Viking I became the first spacecraft to land on Mars.

Moving forward in time, the first piece of the International Space Station (ISS) was launched in 1998, making it possible for humanity to have an ongoing presence in space. SpaceX's 2010 launch and safe return of a rocket marked a significant milestone in the privatization of outer space travel. Finally, we arrive at our present moment, where there are over 12,000 satellites, 9,000 of which are active, orbiting the earth.

Handbook page X	Space Law and Armed Conflict	**1 min**

Coordinator Notes:



Say:

So, there are thousands of satellites orbiting the earth. You might be wondering, though: What do we use satellites for? Well, satellites serve a variety of both civilian and military functions.

On the civilian side, they are vital to our telecommunications and broadcasting capabilities; satellites provide internet, telephone, and television services. Every time you turn on the TV or Google something on your phone, you are relying on a satellite connection. We similarly rely on satellites for navigation and transportation. Companies like Apple, Google, and Microsoft offer GPS mapping technology that allows users to easily navigate their everyday travels. People also rely on GPS for travel via planes and ships, both of which involve complex routes that span the globe.

Handbook page X	Space Law and Armed Conflict	**30 sec**

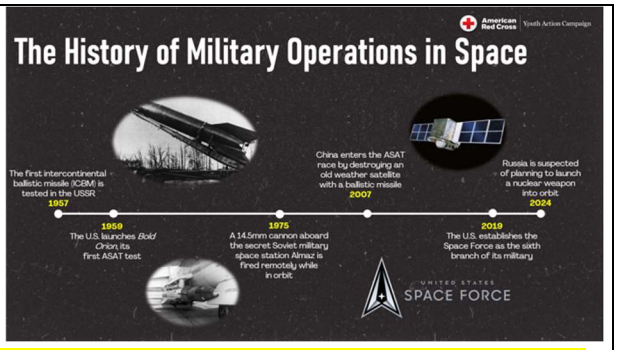
Coordinator Notes:

Say:

Civilian satellites are also used for weather forecasting and Earth resources monitoring. Aside from predicting the temperature day-to-day, satellites can track and predict storms, forest fires, and volcanic eruptions. Finally, satellites are vital to space exploration and expanding humanity's understanding of the cosmos. For instance, the Hubble Space Telescope has studied a vast array of cosmic objects astronomers were unable to capture from Earth.

Handbook page X	Space Law and Armed Conflict	**1 min 20 sec**

Coordinator Notes:



Say:

Military technology and outer space have always been linked to one another. The development of the intercontinental ballistic missile, or ICBM, in 1957 gave the USSR the firepower to launch Sputnik into orbit. As soon as a satellite was successfully launched, states began figuring out how to disable those used by their enemies. In 1959, the United States launched *Bold Orion*, its first anti-satellite, or ASAT, weapon. *Bold Orion* marked the first interception of a satellite in space. In 1975, a 14.5mm cannon aboard the USSR's secret military space station Almaz was fired remotely in orbit, the only declassified instance of a weapon being fired in space.

Years after the Cold War ended, China entered the ASAT race by destroying an old weather satellite with a ballistic missile. Despite having conducted a similar test in 1985, the US condemned China's actions. In 2019, the U.S. established the space force as the sixth branch of its military, signaling changing views towards space as a domain of warfare. Finally, in the midst of escalating tensions with the West because of its invasion of Ukraine, various reports allege Russia is planning to launch a nuclear weapon into orbit.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:

Say:

Clearly, militaries have taken a great interest in outer space.

Ask: But what exactly do they use it for, practically speaking?

Answer: For one, they use satellites orbiting the earth for intelligence and surveillance. Satellites help militaries identify troop locations and other targets like weapons facilities. Satellites are also used as early warning systems, detecting incoming missile launches and providing vital time for response. Additionally, GPS is used for navigation. Just as it is used by civilians, soldiers use GPS coordinates to orient themselves on and traverse through the battlefield.

Handbook page X	Space Law and Armed Conflict	**20 sec**

Coordinator Notes:

Say:

Moreover, satellites allow militaries to communicate, whether between headquarters and ground forces or among individual units maneuvering in battle. Data networks allow armies to issue commands and act together. Finally, satellites are used in targeting; satellite information is used to deploy ground forces and fire munitions.

Handbook page X	Space Law and Armed Conflict	**15 sec**

Coordinator Notes:

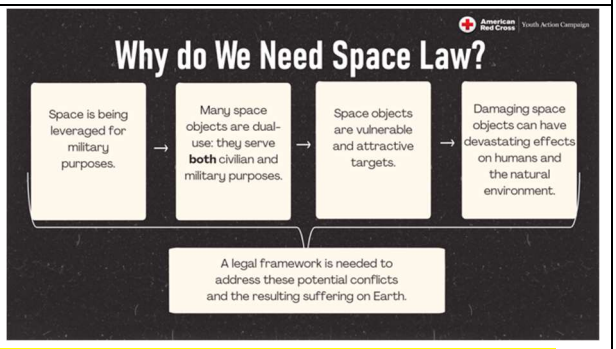
Say:

We now know that humanity is active in space and that space serves vital civilian and military functions.

Ask: But why do we need laws to regulate a distant, ungoverned place incapable of sustaining human life?

Handbook page X	Space Law and Armed Conflict	**1 min 30 sec**

Coordinator Notes:



Say:

First, war is already being waged in space and, like land and sea warfare, must be governed by laws. The 1991 Gulf War is widely considered the first ”space” war because satellites were used for troop navigation, to gather information on enemy troop movements, and as early warning systems against missile attacks. States have continued to utilize space in ongoing conflicts, as well. In the Ukraine conflict, satellites are used to control unmanned drones, to launch precision-guided munitions (or pgms) and cyber-attacks, and for high-speed internet on the battlefield. But, as we have established, space objects also provide benefits to the civilian population. In fact, some satellites are what IHL refers to as dual-use objects, meaning they have both military and civilian functions and thus require rules on whether they may be targeted during armed conflict.

Not only do space objects provide military utility, but they are also good targets. They are limited in number, set on fixed paths which make them easy to track, expensive, and relatively easy to destroy. However, states cannot damage or destroy space objects at will because of the dangers of space debris. Debris that falls to the earth or damages other space objects while remaining in orbit can have catastrophic effects on humans, the natural environment, and critical civilian infrastructure.

All of this means that a legal framework is needed to address these potential conflicts and the resulting suffering on Earth.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:

Say:

Because of the strong need for laws governing outer space, states have developed a robust framework of international treaties, agreements, and conventions to govern the use of and activities occurring in outer space. Most of these treaties do not specify that they apply during armed conflicts, but the broad language used covers such situations. IHL is also incorporated into the space law framework.

Handbook page X	Space Law and Armed Conflict	**45 sec**

Coordinator Notes:

Say:

There are three types of conflicts that can take place in space, none of which have occurred yet. The first is a conflict that takes place entirely in space. In such a conflict, states have weapons stationed in outer space that they use to target enemy satellites, space stations, and combatants located in outer space.

A second type of conflict is a space-based conflict with ground effects. That is, weapons stationed in outer space are fired down on Earth, where their effects are felt on the surface.

Finally, there may be a ground to space conflict, where weapons on earth are fired and strike targets in space, destroying them or preventing them from being able to carry out their functions.

Handbook page X	Space Law and Armed Conflict	**2 min**

Coordinator Notes:

Say:

The international community anticipated the advent of space conflict and developed a robust legal framework to regulate conflict in space. Although some suggest that these international treaties lack specificity, the expansive definitions included within them ensure they will continue to apply to advanced technologies and contemporary methods of warfare.

The first piece of international law regulating conduct in space is the 1963 Partial Test Ban Treaty, which prohibits testing nuclear weapons and explosions in the atmosphere and outer space.

The Outer Space Treaty quickly followed in 1967 and provides a framework for international actions in space and a set of core principles.

Shortly before the first moon landing, the Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space entered into force in 1968. The agreement ensures that signatory States will take all possible steps to rescue and assist astronauts in distress and promptly return them to the launching state.

As States with space capabilities continued launching objects, they recognized the need to draft a convention assigning liability for damage caused by outer space objects on the surface of the Earth or to aircraft. This recognition brought about the 1972 Convention on International Liability for Damage Caused by Space Objects.

The international community further decided to regulate conduct in space by creating the 1976 Convention on the Registration of Objects Launched in Outer Space. This Convention requires signatory parties to create registries to identify objects launched into space, whether by governmental or non-governmental entities.

The most recent agreement we will discuss entered into force in 1984, the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, also known as the Moon Agreement. The international community sought stricter regulations of conduct in outer space regarding the Moon and other Celestial Bodies, and drafted the agreement to reaffirm the principles of the Outer Space Treaty.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:

Say:

The Partial Test Ban Treaty, or PTBT, prohibits nuclear weapons tests and nuclear explosions underwater, in the atmosphere, and, most importantly for our purposes, in outer space. Underground nuclear tests are permitted, so long as no radioactive debris falls outside the nation conducting the test. The treaty is of unlimited duration and has 123 signatory states.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:

Say:

The Outer Space Treaty, or OST, is the seminal international treaty on space. It emphasizes the use of outer space for peaceful purposes: states party to the treaty must ensure that the exploration and use of outer space shall be carried out for the benefit of all mankind. As such, it forbids establishing military bases, testing weapons, and conducting military maneuvers on celestial bodies. Moreover, no state can claim territorial sovereignty in space or place weapons of mass destruction (WMDs) in orbit.

Handbook page X Space Law and Armed Conflict **20 sec**

Coordinator Notes:

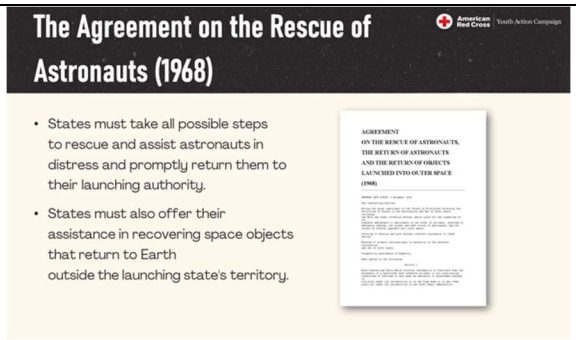
Say:

The OST does not, however, prohibit all military operations in outer space. States have interpreted the phrase "peaceful purposes" to include self-defense and reconnaissance. Fortunately, the OST provides that the full breadth of international law, including IHL, applies in space.

Handbook page X	Space Law and Armed Conflict	**20 sec**

Coordinator Notes:

Say:



The agreement on the Rescue of Astronauts requires that states take all possible steps to rescue and assist astronauts in distress and promptly return them to their launching authority. Additionally, states must also offer their assistance in recovering space objects that return to Earth outside the launching state's territory.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:

Say:

The Liability Convention holds that the state from which a space object is launched is responsible for any harm caused by the object, regardless of intent. For example, if a satellite launched by State A malfunctions and collides with State B's satellite, State A is responsible.

Rather than focusing on limiting action in space, the convention focuses on restitution for damages and procedures for the settlement of claims.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:

Say:

The Registration Convention requires states and intergovernmental organizations to establish national registries of their space objects that specify the "general function" of each object. This information must also be provided to the UN Secretary-General. To date, 88% of all space objects have been registered in accordance with the convention, indicating widespread compliance.

Handbook page X	Space Law and Armed Conflict	**20 sec**

Coordinator Notes:

Say:

The final international treaty we will touch on is the Moon Agreement, which states that the Moon and other celestial bodies should be used exclusively for peaceful purposes, reaffirming one of the core principles of the OST. It also states that the Moon and its natural resources are the common heritage of mankind.

Handbook page X	Space Law and Armed Conflict	**45 sec**

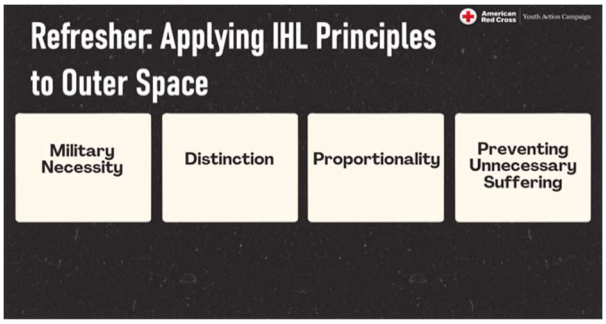
Coordinator Notes:

Say:

These space treaties are not the only components of international law that apply in outer space. IHL applies as well! Additional Protocol I to the Geneva Conventions states that it applies "to any land, air or sea warfare which may affect the civilian population, individual civilians or civilian objects on land." Moreover, the International Court of Justice held in its 1996 *Nuclear Weapons Advisory Opinion* that IHL applies to "all forms of warfare and to all kinds of weapons, those of the past, those of the present and those of the future." International courts like the ICJ are helpful in clarifying and filling in gaps in the broader international legal framework.

Handbook page X	Space Law and Armed Conflict	**20 sec**

Coordinator Notes:



Say:

IHL at the most basic level can be understood in terms of its four core principles: military necessity, distinction, proportionality, and preventing unnecessary suffering. Each principle constitutes customary international law that binds all states and applies to any conflict taking place in outer space.

Handbook page X	Space Law and Armed Conflict	**20 sec**

Coordinator Notes:

Say:

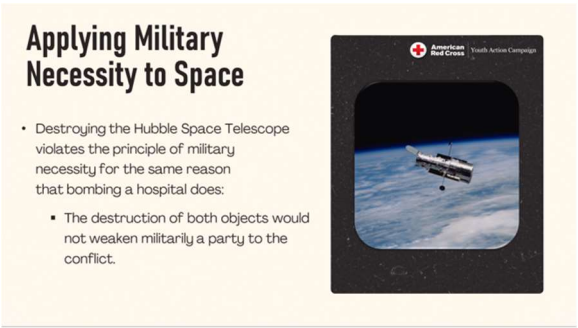
Military necessity allows parties to a conflict to take measures that are necessary to accomplish a legitimate military purpose which are not otherwise prohibited by international humanitarian law. In armed conflicts, the only legitimate military purpose is to weaken the military capabilities of the opposing party.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:

Ask:

How would military necessity apply in the context of an armed conflict in space?



Say: Just like on land, in the air, or at sea, parties to a conflict may only take measures in space if doing so would accomplish a legitimate military purpose. For example, a state party to a conflict cannot bomb a hospital: destroying such an object would not weaken militarily another party to the conflict. For the same reason, that state cannot destroy the Hubble Space Telescope; it is used exclusively for civilian scientific purposes and has no legitimate military purpose.

Handbook page X	Space Law and Armed Conflict	**20 sec**

Coordinator Notes:

Say:

The second fundamental principle, distinction, requires that parties to a conflict always distinguish between civilians and combatants and civilian and military objects. As the two images on the slide illustrate, a hospital is a civilian object and therefore may not be targeted, while a tank is military object that may be targeted.

Handbook page X Space Law and Armed Conflict **20 sec**

Coordinator Notes:

Say:

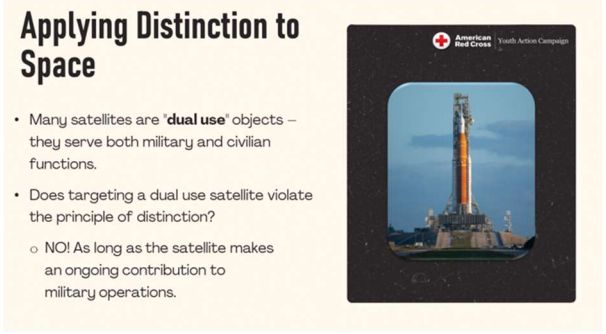
In the context of outer space, issues of distinction most often arise in relation to dual-use satellites – objects that serve both military and civilian functions. For example, a satellite might provide GPS services to both civilians in their homes and to soldiers on the front lines.

Ask: Does targeting a dual use satellite violate the principle of distinction?

Handbook page X Space Law and Armed Conflict **20 sec**

Coordinator Notes:

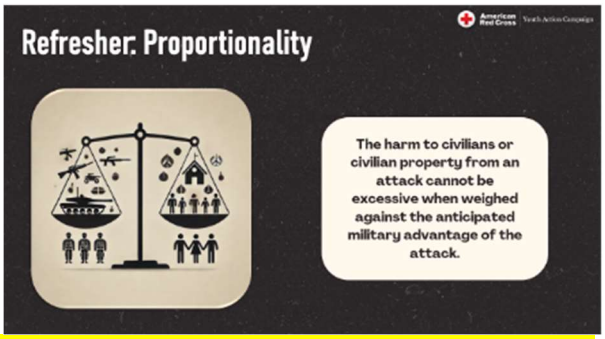
Say:



NO! As long as the satellite makes an ongoing contribution to military operations, the principle of distinction is satisfied. Whether the dual use satellite is ultimately targetable, however, depends on an analysis of all four fundamental principles.

Handbook page X	Space Law and Armed Conflict	**20 sec**

Coordinator Notes:

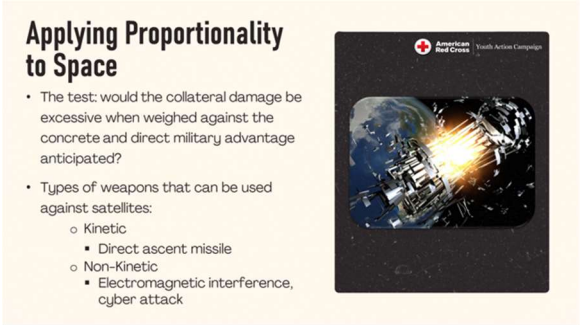


Say:

The third fundamental principle, proportionality, requires that the harm to civilians and civilian property from an attack not be excessive when weighed against the anticipated military advantage of the attack. We may refer to the "harm to civilians and civilian property" as the "collateral damage" of an attack.

Handbook page X	Space Law and Armed Conflict	**1 min 15 sec**

Coordinator Notes:



Say:

The proportionality test is the same in outer space as it is on Earth: would the collateral damage be excessive when weighed against the concrete and direct military advantage anticipated?

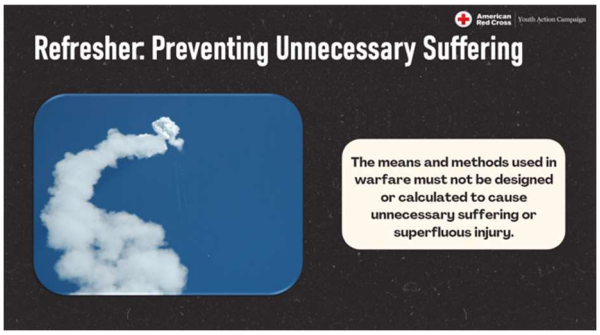
There are a two primary means of eliminating enemy space objects, most of which are satellites, and each creates a different level of collateral damage.

Kinetic weapons are designed to collide with a target or explode in close proximity to it. Direct ascent weapons are launched into orbit and intercept their target within minutes, while co-orbital devices are placed in space and may orbit benignly for years until directed to attack.

Non-kinetic weapons, on the other hand, do not involve collisions or explosions. They include directed energy systems, electromagnetic interference, and cyber attacks. Directed energy systems are high-energy lasers that can be used to burn holes in enemy satellites or dazzle specific sensors, inflicting permanent damage or selective, temporary denial of service. Electromagnetic interference involves jamming vital signals to and from a satellite. Finally, a cyberattack on a satellite could involve scrambling or commandeering a satellite's onboard computers.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:



Say:

The final fundamental principle is preventing unnecessary suffering. IHL seeks to prevent unnecessary suffering by requiring that the means and methods used in warfare not be designed or calculated to cause unnecessary suffering or superfluous injury. Chemical weapons, like the one pictured on this slide, are a prominent example of weapons that cause unnecessary suffering. This principle applies only to combatants.

Handbook page X Space Law and Armed Conflict **30 sec**

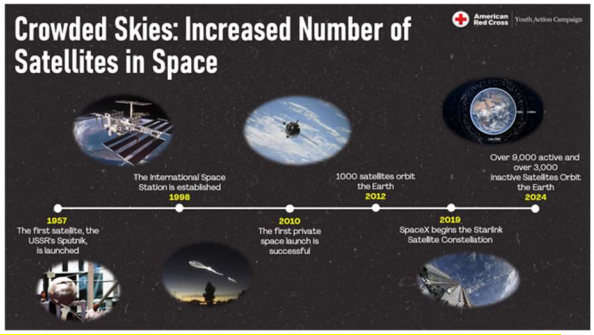
Coordinator Notes:

Say:

Given how few, if any, combatants there are in outer space, it might be difficult to picture how the principle of preventing unnecessary suffering applies to outer space. However, weapons designed or calculated to cause unnecessary suffering to combatants on Earth may be fired from space. For instance, a chemical weapon stored on a satellite can be fired down on Earth and unleash its illegal effects on combatants.

Handbook page X Space Law and Armed Conflict **1 min 15 sec**

Coordinator Notes:



Say:

It's important to keep the fundamental principles in mind and understand how they continue to apply to any entity operating in outer space. The first launch of the Sputnik satellite in 1957 kicked off the "Space Race" and eventually led to the growth of outer space activity that we're witnessing now. The launch of the International Space Station in 1998 represents the international push toward using outer space for scientific purposes, and has since given 15 countries the ability to visit and explore space. We see later in 2010 the first successful launch and return of a private rocket, conducted by SpaceX with its Falcon 9 rocket. Soon after that, there was an

unprecedented increase in actors operating in space, with approximately 1000 active satellites registered in 2012 to over 12,000 in 2024. SpaceX's Starlink constellation, initially launched in 2019, constitutes at least half of these satellites.

Although national governments are no longer the main actors operating in space, they are still responsible for all launches conducted within their territory. The international agreements and treaties that we covered earlier in the module foresaw this rapid expansion and established principles to ensure that state behavior would not have severe adverse effects.

Handbook page X | Space Law and Armed Conflict | **45 sec**

Coordinator Notes:

Say:

One of the most significant principles established to prevent severe adverse effects is the Due Regard Principle of the Outer Space Treaty. Article IX of the treaty ensures that states shall "be guided by the principle of cooperation and mutual assistance" in the exploration and use of outer space, and that all activities will be conducted "with due regard to the corresponding interests of all other States party to the Treaty".

Importantly, the Due Regard Principle is reciprocal, meaning that while signatory States are constrained in their actions, their own activities are also protected. Although it may be worrying that the number of active satellites in space increased by over 800% in 12 years, an obligation already exists to limit potential adverse effects down here on Earth.

Handbook page X | Space Law and Armed Conflict | **1 min 10 sec**

Coordinator Notes:

Say:

The most relevant application of the Due Regard Principle concerns space debris. Because of the increased presence of satellites and entities operating in space, the more likely it becomes that collisions will occur. When satellites collide with one or more space objects, as can be expected, they break into thousands of pieces, throwing fragments into orbit. Even the smallest pieces of space debris can cause severe damage to other satellites or to the natural

environment down on Earth.

The danger of these collisions has led to the recognition of a theoretical scientific phenomenon known as the Kessler Syndrome. When one satellite collides with another, it increases the number of objects in orbit, causing more collisions to occur. It has been thought that once a major collision occurs, a domino effect will result and lead to an infinite number of collisions between the debris and other satellites. The cascading effects will disrupt countless systems here on earth that rely on technology in orbit and inevitably destroy all activity that has occurred in space.

Although an extreme outcome, States party to the treaty must ensure that their actions do not contribute to such significant and severe adverse effects such as the Kessler Syndrome.

Handbook page X	Space Law and Armed Conflict	**1 min**

Coordinator Notes:

Say:

A major concern with respect to the due regard principle and the creation of space debris is what would happen if a satellite was targeted in the midst of an armed conflict. We have identified three types of collateral damage that could be created by targeting a satellite, all of which must be considered in light of the due regard principle and the principle of proportionality.

The first scenario would arise when debris from an attack falls to earth, killing civilians or destroying civilian objects.

The second scenario would arise when debris from an attack remains in orbit and collides with a critical civilian satellite, preventing it from carrying out its function.

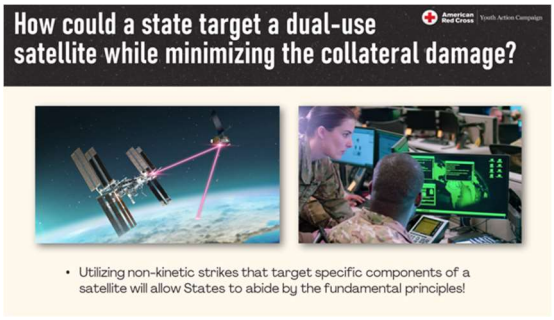
The third scenario would arise when a destroyed or disabled dual-use satellite can no longer carry out its civilian function.

In each case, the state conducting such an attack must consider whether the collateral damage created is excessive in relation to the concrete military advantage anticipated. They must also consider the OST and whether they are acting with due regard to the interests of all other States Parties to that treaty.

Handbook page X	Space Law and Armed Conflict	**45 sec**

Coordinator Notes:

Ask: How could a state target a dual-use satellite while minimizing the collateral damage such that the four fundamental principles are satisfied?



Say:

By utilizing non-kinetic strikes! In principle, if a state has acquired precise intelligence about the nature of a dual use satellite and the location of a military target within the satellite, then it is obligated under IHL to attack only the military target without disrupting the satellite's civilian functions. Such precise targeting using cutting-edge technology might not always be available to every state, but states in possession of such capabilities are obligated to refrain from using kinetic strikes capable of creating catastrophic collateral damage on Earth.

Handbook page X Space Law and Armed Conflict **10 sec**

Coordinator Notes:

Say:

We'll shift now to looking at the first specialized topic and understand how certain IHL concerns and protections for the natural environment translate in their application to outer space.

Ask: How many students participated in the 2022-2023 YAC environmental curriculum year?

Handbook page X Space Law and Armed Conflict **30 sec**

Coordinator Notes:

Say:

Does IHL apply to the natural environment? Yes! While the outer space treaties do not explicitly

contain protections for the natural environment, the protections and obligations in IHL apply to armed conflicts in outer space and can be utilized to limit significant adverse effects on Earth.

Specifically, IHL prohibits any means and methods of warfare that cause "widespread, long-term and severe effects" to the natural environment. This phrase is found in all three legal provisions we'll be analyzing in this module.

Handbook page X	Space Law and Armed Conflict	**40 sec**

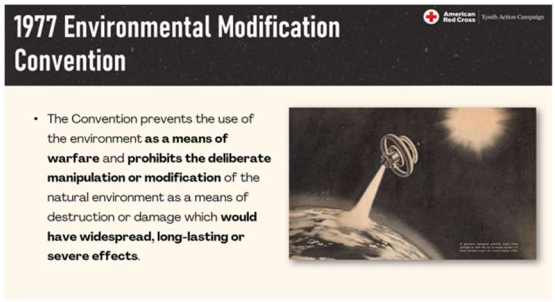
Coordinator Notes:

Say:

The main international agreement protecting the natural environment is the 1977 Environmental Modification Convention. We'll also examine Additional Protocol I, Articles 35(3) and 55(1) to understand their differences and how each can be utilized to protect the natural environment during an armed conflict in outer space. Importantly, Additional Protocol I is applicable only during a conflict between two state parties, rather than a state party and a non-state armed group, as those are governed by Additional Protocol II. Additional Protocol II only has language to indirectly protect the environment.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:



Say:

The 1977 Environmental Modification Convention was specifically designed to prevent the use of the environment as a means of warfare and prohibit the deliberate manipulation or modification of the natural environment as a means of destruction or damage which would have widespread, long-lasting or severe effects. The Convention does not affect scientific activities taken during peacetime.

Handbook page X	Space Law and Armed Conflict	**1 min**

Coordinator Notes:

Say:

Currently, applying the Environmental Modification Convention to Space requires using a bit of our imagination to theorize weaponry with the capacity to manipulate or modify the natural environment from outer space. For instance to combat climate change, states may develop technology to modify the climate by influencing the formation and frequency of hurricanes, floods, droughts, or change the temperature entirely. Technology could also disrupt and modify the flow of tides and currents.

Ask: How might this technology be utilized during an armed conflict?

Answer: Answers could include creating hurricanes to disrupt military operations, flooding weapons stockpiles or destroying vehicles, creating droughts and modifying temperatures to make certain areas inhospitable to a military presence, or using tides to create tidal waves and destroy coastal bases or interfere with naval activities.

Handbook page X	Space Law and Armed Conflict	**40 sec**

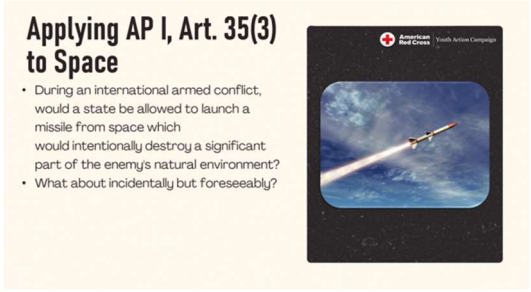
Coordinator Notes:

Say:

The need to protect the natural environment was also recognized in two articles of Additional Protocol I. First, Article 35(3) prohibits employing materials and methods of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment. Recent scholarship and dialogue within the international community has placed an emphasis on the clause “or may be expected”, to try and hold accountable states which act in a manner that unintentionally, but likely foreseeably, causes widespread, long-term and severe damage to the natural environment.

Handbook page X	Space Law and Armed Conflict	**45 sec**

Coordinator Notes:



Ask:

During an international armed conflict, would a state be allowed to launch a missile from space which would intentionally destroy a significant part of the enemy's natural environment, as a means of warfare?

What about incidentally but foreseeably?

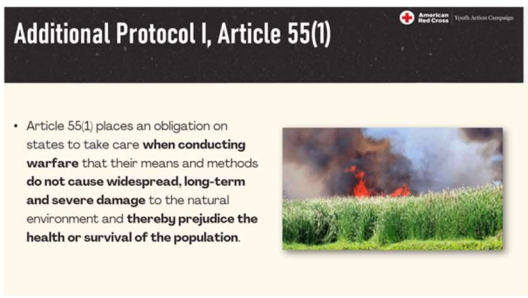
Answer:

A state would not be allowed to launch a missile which intentionally destroys a significant part of the enemy's natural environment, as that would directly violate this article.

It is less clear whether a state could launch a missile which incidentally, but foreseeably, causes severe, widespread, and long-lasting damage to the natural environment. Foreseeability is taking on a larger role in the analysis and will hopefully provide accountability for states that act without due regard to the natural environment.

Handbook page X Space Law and Armed Conflict **30 sec**

Coordinator Notes:



Say:

The prohibition is furthered in Article 55(1) by placing an obligation on states to take care when conducting warfare that their means and methods do not cause widespread, long-term and severe damage to the natural environment and thereby prejudice

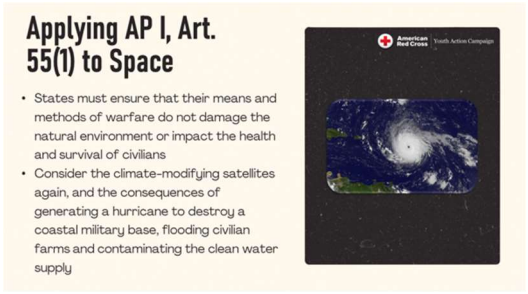
the health or survival of the population. Included in this provision as well is the clause "or may be expected to cause", again illustrating the foreseeability aspect of the prohibition.

Handbook page X	Space Law and Armed Conflict	**50 sec**

Coordinator Notes:

Say:

States must ensure that their means and methods of warfare do not damage the natural environment or impact the health and survival of civilians



Consider the climate-modifying satellites again, and the consequences of generating a hurricane to destroy a coastal military base, flood civilian farms and contaminate the clean water supply.

Ask:

How might these actions both damage the natural environment and impact the health and survival of civilians?

Answer:

Although a coastal military base is a legitimate military target for attack, civilian farms and clean water supplies are not. Food and water are necessary for the health and survival of civilians, and impacting their availability, even when also targeting a legitimate military target, would violate the protections in this article.

Handbook page X	Space Law and Armed Conflict	**15 sec**

Coordinator Notes:

Say:

We'll shift now to looking at the second specialized topic and understand how certain IHL concerns and protections apply on private and non-governmental actors in outer space.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:

Say:

So does IHL apply to private and non-governmental actors? Yes! IHL is binding on all actors and their activities that may be closely linked to conflict.
Although there is no single accepted definition for the phrase "closely linked", it is fairly easy to imagine how certain actors, such as private companies operating in space, may become closely linked to conflict.

Handbook page X	Space Law and Armed Conflict	**50 sec**

Coordinator Notes:

Say:

These companies are just a handful of new actors in space. The most prominent one, SpaceX, designs, manufacturers, and launches rockets and other spacecraft. Its Starlink Constellation provides broadband coverage to over 80 countries and has been utilized by the Ukrainian military in its defense against the Russian invasion.

Sierra Space Corporation and Blue Origin are currently working together to develop the first commercially owned Space Station for space tourism and other activities. Think Orbital received a contract with NASA for the company's progress in innovating in-space manufacturing and welding. Skyloom received a contract with the US Air Force to develop hybrid space optical satellite communications, essentially improving communication and network infrastructure.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:

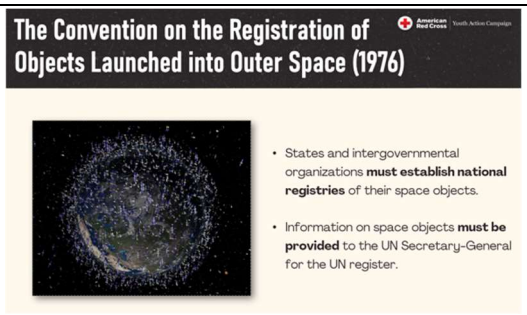
Say:

Private actor behavior is regulated in IHL by two main principles: 1) the fact that while the activity is being done by a private company or individual, the state is not absolved from taking responsibility; and 2) private actors must minimize harm when acting to benefit society. This is also known as *Corporate Social Responsibility*.

We'll look now to the space treaties that regulate private actor conduct in space: the Registration Convention, the Liability Convention, and the Astronaut Rescue Agreement.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:



Say:

The Convention on the Registration of Objects Launched into Outer Space, signed in 1976, mandates that states and intergovernmental organizations must establish national registries of their space objects.

Additionally, information on space objects must be provided to the UN Secretary-General for the UN registry. These are voluntary contributions from states.

These registries facilitate information exchanges between launching states and their agencies and provide accountability should space activity require monitoring.

Handbook page X	Space Law and Armed Conflict	**20 sec**

Coordinator Notes:

Say:

In practice, the Registration Convention has been a success. As of June 2024, 88% of space objects were registered in the UN Secretary-General Registry.

The current minimum space object size for U.S. registration is 6-10 cm, or about the size of a baseball.

Handbook page X	Space Law and Armed Conflict	**1 min**

Coordinator Notes:

Say:

The Liability Convention makes clear that any state which launches objects into space is potentially liable to pay compensation for damage caused by its objects.

Article II of the Liability Convention provides that when damage is caused directly on the surface of the planet, the launching state is absolutely liable.

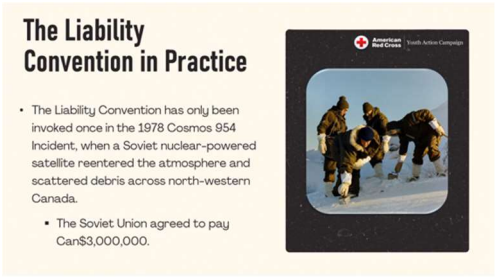
Article III of the Convention provides that when damage is caused elsewhere than on the surface of the earth to a space object of one State, the launching State shall be held liable only if the damage is due to its fault or the fault of persons for whom it is responsible, such as a private company.

Article IV provides that when two Launching States have damaged a third State's space objects in outer space, the first two States shall be jointly and severally liable to the third State. If damage caused to the third State occurs on the surface of the planet, the two States are liable regardless of their intentions.

Legal liability is an incredibly complex and difficult subject, often with no clear answer.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:



Say:

In practice, the Liability convention has only been invoked once. This occurred in 1978 due to the Cosmos Incident, when a Soviet nuclear-powered satellite reentered the atmosphere suddenly and scattered debris, including radioactivity, across north-western Canada.

Following the obligations of the convention, the Soviet Union agreed to pay $3,000,000 Canadian dollars to Canada.

Handbook page X | Space Law and Armed Conflict | **30 sec**

Coordinator Notes:

Say:

The Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space, signed in 1968, is an example of international cooperation, as the states agree to take all possible steps to rescue astronauts in distress and return them to the launching state. Additionally, upon request, States will provide assistance to launching states to recover space objects that return outside of the territory of the launch state.

Handbook page X | Space Law and Armed Conflict | **15 sec**

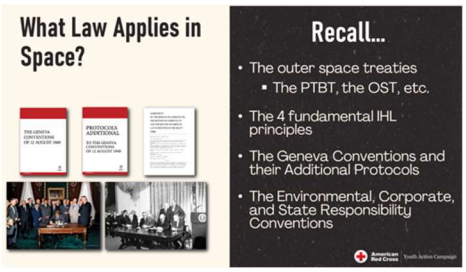
Coordinator Notes:

Say:

In practice, the rescue agreement has never been invoked to rescue an astronaut, but rather is frequently used to retrieve and recover space objects that have fallen outside the territory of the launching state.

Handbook page X	Space Law and Armed Conflict	**30 sec**

Coordinator Notes:



Say:

So what law applies in space? Recall the aforementioned outer space treaties: the Partial Test Ban Treaty, the Outer Space Treaty, the Liability Convention, the Registration Convention, and the Astronaut Rescue Convention.

Recall also the four fundamental principles of IHL, the Geneva Conventions and their Additional Protocols, as well as the Environmental, Corporate, and State Responsibility Principles.

Handbook page X	Space Law and Armed Conflict	**40 sec**

Coordinator Notes:

Say:

The framework is robust, and IHL is capable to address and regulate the occurrence of armed conflict in space. Consider though: 1) if the existing framework can address debris-causing events, such as ASAT testing and prevent the Kessler Syndrome, 2) consider also the potential policy implications that may arise if scientific vessels such as the ISS is seen as a legitimate military target due to the presence of a soldier on board, 3) and reflect on how evolutions in IHL usually follow in the wake of armed conflict and the potential value of advocating now to action, rather than waiting for an armed conflict in space.

Handbook page X	Space Law and Armed Conflict	**20 sec**

Coordinator Notes:

Say:

We'll move now onto examining several case studies to test our knowledge of outer space and the

application of international humanitarian law. Each case study will touch on the topics that we covered in the last hour, including the four fundamental principles, environmental protections, and IHL rules pertaining to corporate actors.

Handbook page X	Space Law and Armed Conflict	**1 min 10 sec**

Coordinator Notes:

Say:

Two states, Ryloth and Tatooine, are engaged in an international armed conflict. Each state possesses ASAT weapons capable of disabling, jamming, or destroying enemy space objects. Both states are also parties to all existing treaties relating to outer space and IHL. However, Tatooine's military recently confirmed that Ryloth has launched a rocket into space containing a nuclear warhead. Ryloth has stated the weapon is for deterrent and defensive purposes.

Ask:

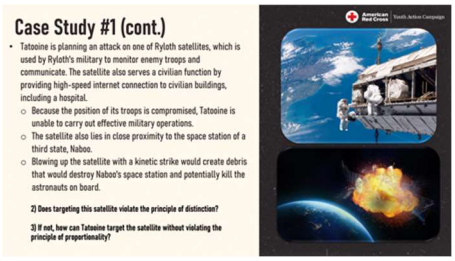
1) *Did Ryloth violate any international treaties by launching a nuclear weapon into space?*

Answer: Yes, Ryloth violated the 1967 Outer Space Treaty, which prohibits placing weapons of mass destruction in orbit.

If Ryloth detonated the nuclear weapon in space, even as a test, would it violate any additional treaties or principles?

Answer: Yes, Ryloth would violate the 1963 Partial Test Ban Treaty if it detonated a nuclear weapon in space. The PTBT expressly prohibits such action.

Handbook page X	Space Law and Armed Conflict	**1 min 50 sec**



Coordinator Notes:

Say:

Tatooine is planning an attack on one of Ryloth's satellites. The satellite in question is used by Ryloth's military to monitor enemy troops and communicate their position to remote-piloted drones. Because the position of its troops is compromised, Tatooine is unable to carry out effective military operations and has been losing ground on the battlefield for months.

However, a separate component of the satellite serves a civilian function. It provides a high-speed internet connection to civilian buildings, including a hospital, which relies on this connection to monitor the health of its patients. Moreover, the satellite lies in close proximity to the civilian research space station of a third state, Naboo. Blowing up the satellite with a kinetic strike would create debris that would destroy Naboo's space station and potentially kill the astronauts on board.

Ask:

3) Does targeting this satellite violate the principle of distinction?

Answer: NO! As long as a satellite makes an ongoing contribution to military operations, the principle of distinction is satisfied. Ryloth's satellite contributes to military operations by monitoring enemy troops and communicating their position to remote-piloted drones, so it is irrelevant for distinction purposes that it also serves a civilian function.

4) If not, how can Tatooine target the satellite without violating the principle of proportionality?

Answer: Tatooine can target Ryloth's satellite by using a non-kinetic strike that disables only the military component of the satellite, which will not violate the principle of proportionality. Examples of non-kinetic strikes include directed energy systems, electromagnetic interference, and cyber attacks.

Handbook page X | Space Law and Armed Conflict | **3 min 45 sec**

Coordinator Notes:

Say:

The government of Naboo has begun to support Ryloth in the war and decided to join the conflict. Without officially declaring war, the Naboo military has utilized their ground to space missile technology to attack the Tatooine military satellites that are in close proximity to Naboo's planet, thereby disrupting Tatooine's communication and targeting abilities.

Tatooine, outraged by Naboo's participation in the conflict, is planning to deploy their climate-

altering satellite to create severe hurricanes across Naboo, preventing their use of ground-to-space missiles and destroying on-planet bases and military equipment. The satellite will also cause significant flooding, likely severely damaging the agricultural industry, which provides food for both the Naboo military and civilians.

If deployed, the climate-altering satellite would have profound consequences on Naboo's agriculture and overall biodiversity. There will likely be a famine and the natural environment is uncertain to fully recover.

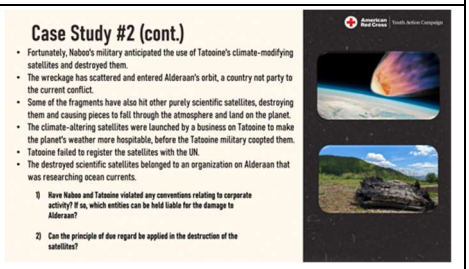
Ask:

How would IHL protections apply to this situation?

***Answer**:*

Tatooine will not be able to deploy their weather-modifying satellites under the 1977 Environmental Modification Convention, as it prohibits deliberately modifying or manipulating the environment as a means and method of warfare. The potential to cause severe, wide-spread, and long-lasting harm to the natural environment also violates AP I, Article 35(3) and if it destroys the agricultural foodstuff of the Naboo civilian population, violates Article 55(1).

Handbook page X	Space Law and Armed Conflict	**2 min 20 sec**



Coordinator Notes:

Say:

Fortunately, Naboo's military anticipated the activation of Tatooine's climate-modifying satellites and successfully destroyed them using their ground-to-space missiles. However, the wreckage has scattered and entered into Alderaan's airspace, a country not party to the current conflict. Some of the fragments have also hit other purely scientific satellites, destroying them and causing pieces to fall through the atmosphere and land on Alderaan.

The climate-modifying satellites were launched by a business on Tatooine that had originally tried to make the planet's weather more hospitable to agriculture, before they were coopted by the Tatooine military. Tatooine failed to register the company's scientific satellite with the UN. The destroyed scientific satellites belonged to an organization in Alderaan that was researching ocean currents.

Ask:

2) Have Naboo and Tatooine violated any conventions relating to corporate activity? If so, which entities can be held liable for the damage to Alderaan?

3) Can the principle of due regard be applied in the destruction of the satellites?

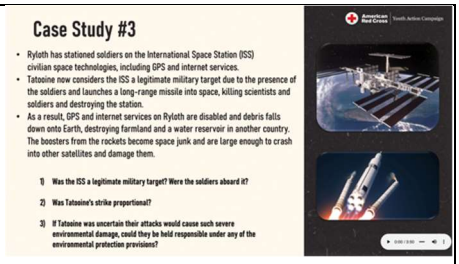
Answer:

Let's first start with the registration convention. Tatooine's actions by failing to register their satellites with the UN does not violate the Convention, since that provision is voluntary.

However, the Liability Convention will likely be invoked by Alderaan in response to the destruction of their satellites and the damage caused on the surface of their planet. For instance, Naboo may be held liable for the destruction of the other purely scientific vessels, even if it was acceptable collateral damage under IHL. Alderaan may also try to seek compensation from Tatooine as well, since the initial activation of their satellites in the context of combat spurred Naboo to act. As shown here, there is rarely a clear answer in the law and whatever liability Alderaan seeks will hopefully bring justice.

Looking now toward the principle of due regard, by utilizing kinetic strikes to incite debris-causing events, Naboo may not have acted with Due Regard to Alderaan. While the principle is guiding and not legally binding, it may set an unfortunate precedent allowing further destruction of scientific vessels and civilian objects to be acceptable by customary actions.

Handbook page X	Space Law and Armed Conflict	**3 min 50 sec**



Coordinator Notes:

Say:

Ryloth has now decided to station soldiers on the International Space Station (ISS) to protect its civilian space technologies, including GPS and internet services. Tatooine decides that the ISS has become a legitimate military target due to the presence of the soldiers and launches a long-range missile into space, killing the scientists and soldiers aboard the ISS and destroying the station.

As a result, GPS and internet services on Ryloth are disabled and debris falls down onto Earth, destroying farmland and a water reservoir in another country. The boosters from the rocket become space junk and are large enough to crash into other satellites and damage them.

Ask: Was the ISS a legitimate military target? Were the soldiers aboard it?

Answer: The ISS was not a legitimate military target because destroying it did not achieve a legitimate military purpose. The ISS is a scientific research satellite that, in this scenario, also provides civilian functions like GPS and internet services. The soldiers aboard the ISS, however, are legitimate targets because killing enemy combatants always achieves a legitimate military purpose.

Ask: Was Tatooine's strike proportional?

Answer: Tatooine's strike was likely not proportional. The soldiers stationed on the ISS, the death of whom is the concrete and direct military advantage anticipated from the attack, were operating in a defensive capacity and their deaths did not provide Tatooine with a significant military advantage. The collateral damage, however, was extensive and clearly excessive when weighed against the limited military advantage gained. GPS and internet services were disabled, farmland and a water reservoir were destroyed, and space debris capable of damaging other satellites was created.

Ask:

If Tatooine was uncertain their attacks would cause such severe environmental damage, could they be held responsible under any of the environmental protection provisions?

Answer:

Although Tatooine was uncertain their attacks would cause such severe environmental impacts, it could be possible to utilize the foreseeability element of AP I Articles 35(3) and 55(1) to fight for justice for the Ryloth people. The provisions prohibit attacks "which may be expected" to cause severe, wide-spread, and long-term damage to the natural environment. Similarly, the contamination of the water

supply would likely impact the survival of the civilian population. It would make for a thrilling prosecution to assess precisely what Tatooine knew and considered at the time of making their attack.

Suggested Additional Question:

Consider the long-term effects of targeting a research vessel such as the ISS. What impact could it have on international cooperation and outer space research?

Answers could include:

- It would set back scientific development out of the concern that scientists would not be protected and lessen the number of individuals willing to pursue a career in scientific fields.
- It could expand the definition of "legitimate military target" far greater than previously acceptable.
- It would discourage cooperation in their scientific activities and limit communication necessary for rapid advancement.
- It could result in another technological race, akin to the space race, but one that occurs in the context of a hot conflict rather than a Cold War.

Handbook page X	Space Law and Armed Conflict	**15 sec**

Coordinator Notes:

Say:

Thank you for participating! We hope you enjoyed this module and learned about the application of IHL principles and international laws in an armed conflict in outer space.