

Report on Field Visit to First Battalion, NDRF Headquarters in Guwahati

A Class Reflection on Technology in Disaster Response

On March 17, 2026, the LLM batch of National Law University and Judicial Academy, Assam (NLUJAA), specializing in Intellectual Property Rights (IPR), conducted an educational visit to the 1st Battalion of the National Defense Response Force in Patgaon, Guwahati. This field experience provided a critical opportunity to analyze the intersection of high-stakes emergency technology and the intellectual property frameworks that protect such life-saving innovations.

This Programme was under the initiative of Dr. Nalanda Bala Murugan, the DPIIT-IPR Chair at National Law University and Judicial Academy, Assam. At the First Battalion NDRF Headquarters, Commander Dr. Bala Murugan, the Chief Medical Officer, provided detailed insights into the NDRF's roles and functions and its crucial role in managing Level III disasters in the country.



NDRF Role in Disaster Risk Management

The National Disaster Response Force (NDRF) is India's premier specialized force for responding to natural and man-made disasters. Raised on January 19, 2006, under the Disaster Management Act, 2005, it operates as a multi-disciplinary force organized on Central Armed Police Force (CAPF) lines.

During our visit, we learned that the NDRF's mandate is comprehensive, covering three distinct phases of disaster management:

- **Pre-Disaster:** Focusing on intensive training, community awareness programs, and joint exercises with stakeholders to ensure readiness.
- **During Disaster:** Providing hi-tech-specialist response for search and rescue operations, particularly in Level-III (most severe) disasters.
- **Post-Disaster:** Assisting states in rehabilitation, reconstruction, and the restoration of normalcy in affected areas.

The force is strategically deployed across 16 Battalions nationwide, positioned based on India's vulnerability profile to minimize response time.



The Intellectual Property Perspective

From an intellectual property rights perspective, the National Disaster Response Force functions as a living laboratory of utility-driven innovation, where the equipment observed, ranging from **Collapsed Structure Search and Rescue (CSSR)** tools to specialized **Chemical, Biological, Radiological, and Nuclear (CBRN)** detection gear illustrates a vast and complex landscape of patented technologies and industrial designs working in tandem to enable effective disaster response.

A key learning for the batch was understanding how the *level of urgency* in disaster situations directly correlates with the deployment and significance of intellectual property-protected technologies; for instance, in Level-III disasters, which represent the highest tier of emergency, the NDRF is proactively deployed and relies heavily on specialized response mechanisms that are often rooted in proprietary, highly sophisticated technologies that must perform flawlessly under extreme pressure and unpredictable conditions.



This underscores the critical importance of robust patent protection, as it incentivizes the development of reliable, high-performance rescue tools while ensuring that innovators retain legal control over their inventions. Additionally, the discussion emphasized the role of intellectual property in fostering national resilience through the concept of “*Atmanirbharta*” (self-reliance), highlighting how patenting indigenous rescue technologies developed by Indian startups and research institutions can reduce dependence on imports, strengthen domestic manufacturing capabilities, and ensure that life-saving tools remain accessible, adaptable, and legally secured within the country; ultimately, this integration of IPR with disaster management not only promotes technological advancement but also reinforces the broader objective of “*Saving Lives & Beyond*” by aligning innovation with public safety and national preparedness.

The Multifaceted IP Landscape of the National Disaster Response Force

Analyzing the National Disaster Response Force inventory of equipment through the lens of Intellectual Property reveals fascinating insights into how several facets of IP intersect with life-saving utility equipment and high-stakes commercial protection.

Patents

Patents form the backbone of technological innovation in disaster response and defence-oriented equipment by protecting novel inventions that offer functional, technical solutions to real-world rescue challenges. In the context of the equipment observed at the National Disaster Response Force (NDRF), patent law governs the mechanical and functional features embedded within each device, ensuring innovation in efficiency, safety, and reliability. This includes not only product patents covering the structure and operation of tools like drones and hydraulic cutters, but also process patents. Together, these forms of patent protection create a comprehensive framework that incentivizes innovation while supporting effective disaster response.

For instance, the **Tunga – Drishya Pro Surveillance Drone** likely incorporates patented technologies relating to flight stabilization algorithms, battery optimization systems for extended endurance, and real-time data transmission mechanisms. These features are not merely aesthetic; they solve technical problems such as maintaining UAV stability in turbulent weather or ensuring reliable communication in disrupted environments.



Similarly, the **Hydraulic Spreader Cutter**, capable of exerting up to 300 kN of cutting force at 630 bar, would involve patents covering its hydraulic pressure systems, valve mechanisms, and force-amplification structures that enable efficient cutting and spreading in high-stress rescue situations. The **Victim Locating Camera System** may include patented aspects in fiber-optic imaging, low-light LED illumination integration, and compact transmission systems that allow visuals from confined spaces to be displayed externally.

Even smaller equipment like the **Ascension (Hand Ascender)** can be patent-protected for innovations in rope-gripping mechanisms, ergonomic handle design that distributes load efficiently, and anti-slip cam systems that enhance rescuer safety.

Furthermore, the **Residual Vapour Detection (RVD) Kit** exemplifies chemical engineering patents, where the specific composition of reagents and the reaction mechanisms that produce color changes upon detecting hazardous gases are protected as inventions. Patents are particularly critical in defence and disaster management because they incentivize private



manufacturers to invest in research and development while allowing governments to procure cutting-edge technology.

At the same time, such patents may be subject to compulsory licensing or government use provisions under national laws (such as those in India) during emergencies to ensure accessibility. Thus, patents in this sector strike a balance between encouraging innovation and ensuring public safety, with each piece of equipment representing a bundle of patented technologies working together to

enhance rescue efficiency and operational effectiveness.

Industrial Designs

Industrial design protection plays a crucial role in safeguarding the aesthetic and ergonomic aspects of disaster response equipment, which, although often overlooked, significantly influence usability, safety, and market differentiation. Unlike patents, which protect functional innovations, industrial design rights focus on the visual appearance, shape, configuration, and surface ornamentation of a product.

In the NDRF equipment list, the **ISatPhone Pro (Satellite Phone)** is a strong example where industrial design protection would apply. Its rugged exterior, button layout, screen placement, and overall form factor are carefully designed to ensure usability in extreme conditions, such as while wearing gloves or operating in low-visibility environments, while also giving the product a distinct visual identity in the market.

Similarly, the **Baselight 420X portable LED lighting tower** also demonstrates the relevance of industrial design protection in rescue equipment. Its slim vertical structure, symmetrical tripod base, and distinctive multi-panel LED head create a recognizable visual configuration. The fan-shaped arrangement of light panels and streamlined telescopic mast contributes to the product's overall aesthetic identity. Under design law, such shape, configuration, and visual arrangement of components may qualify for industrial design protection.



The **Victim Locating Camera System** may have design protection over the compactness and arrangement of its display unit and camera head, ensuring ease of maneuverability in confined spaces.



Even the **Deep Diving Set** may involve industrial design elements in the shape and arrangement of cylinders, valves, and masks to optimize both aesthetics and practical usability underwater.

In high-risk environments like disaster zones, design is not merely about visual appeal; it directly impacts operational efficiency, quick handling, and user safety. Industrial design rights thus prevent competitors from copying these distinctive features, ensuring that manufacturers can maintain a competitive edge while encouraging innovation in user-centered design.

Additionally, in defence and disaster equipment, standardized yet distinctive designs also aid in quick identification and training, as responders become familiar with specific layouts and interfaces. While such designs must often comply with regulatory and safety standards, the unique combination of visual and ergonomic features can still qualify for protection. Therefore, industrial design law complements patents by protecting the non-functional yet essential aspects of equipment, ensuring that innovation extends beyond technology into the realm of usability and human interaction.

Copyright

Copyright law, though less immediately visible in physical equipment, plays a significant role in protecting the informational and expressive components associated with disaster response technologies. In the case of NDRF equipment, copyright would primarily subsist in instruction manuals, training guides, software interfaces, technical drawings, and audiovisual materials used for operation and training.

For example, the **Tunga – Drishya Pro Surveillance Drone** likely operates on proprietary software for navigation, imaging, and data processing; the source code and user interface design of this software would be protected as literary and artistic works under copyright law. Similarly, the **ISatPhone Pro (Satellite Phone)** relies on firmware and communication protocols, the documentation and interface design of which are copyrightable.



The **Victim Locating Camera System** and **Residual Vapour Detection (RVD) Kit** would also come with detailed manuals explaining operational procedures, safety protocols, and interpretation of outputs, such as color changes in detection tubes. These manuals, often containing diagrams, photographs, and structured instructions, are protected as literary and artistic works.

Training videos demonstrating the use of the **Hydraulic Spreader Cutter** or **Specialized Climbing & Ice Rescue Gear** would also fall within the scope of copyright protection as cinematographic works.

Copyright ensures that these materials cannot be reproduced, distributed, or modified without authorization, thereby preserving the integrity and reliability of critical operational information. This is particularly important in disaster response, where inaccurate or unauthorized reproductions of manuals could lead to misuse of equipment and endanger lives. Moreover, copyright protection extends to databases and compilations, such as digital logs or mapping data generated by drones during surveillance operations.

In the defence context, copyright also intersects with issues of confidentiality and national security, as certain materials may be restricted from public dissemination despite being protected works. Unlike patents and industrial designs, copyright does not require registration and arises automatically upon creation, making it a flexible and immediate form of protection. Overall, copyright complements other forms of intellectual property by safeguarding the knowledge, training, and digital infrastructure that enable the effective use of disaster response equipment, ensuring that both the tangible and intangible aspects of such technology are adequately protected.

Trademark



In a disaster zone, the **NDRF Logo** and the branding of the equipment serve as a guarantee of quality, reliability, and official authority. The **NDRF INDIA logo**, often accompanied by the motto "Saving Lives & Beyond," is a registered trademark that distinguishes the force from other agencies. This branding is vital for public trust during chaotic "Level-III" disasters.

Companies like **Tunga** (for drones) use trademarks to protect their corporate reputation. For example, the name "**ISatPhone Pro**" is a trademark that identifies a specific standard of robust satellite communication. The **IP54**

protection rating on the satellite phone functions as a certification of its resistance to dust and water, ensuring the rescuer that the tool meets global industrial standards.

A prominent example of trademark significance is the **LUKAS** brand, which manufactures the **Hydraulic Spreader Cutter**. The LUKAS trademark is globally synonymous with high-pressure rescue tools, and its presence on the equipment signifies that the tool meets rigorous international safety standards, such as a 630 bar working pressure.



LUKAS

Observations of the LLM Batch

Our visit to the NDRF Guwahati unit provided a stark realization regarding the current state of specialized disaster technology in India:

A significant portion of the high-end equipment currently deployed, such as the **ISatPhone Pro** and specialized **Hydraulic Spreader Cutters**, relies on foreign-owned patents and manufacturing. While we observed incredible tools like the **Tunga - Drishya Pro Drone**, there remains a lack of indigenous manufacturing for core components like high-precision sensors and chemical reagents used in the **RVD Kits**. There is an urgent need for Indian startups to not only innovate but also to aggressively file for patents. This legal protection is the first step toward securing the investment needed for large-scale indigenous manufacturing.

The vulnerability profile of India, especially with the high frequency of Earthquakes (75%) and Floods (12%), presents a massive “market” for localized solutions. Startups like **Tunga** are paving the way, but the ecosystem requires more players to reduce our “Import Dependency”. By shifting from a model of procurement to one of indigenous IP creation, India can ensure that its primary disaster response force is not at the mercy of global supply chains during a national crisis.



Conclusion

The visit to NDRF Guwahati underscored that the Right to Life in the face of calamity is intrinsically linked to the Intellectual Property Rights that incentivize life-saving technology. As IPR students, we observed that a “State-of-the-Art” force requires a “State-of-the-Art” legal ecosystem to support it.

True “Atmanirbharta” in disaster response will only be achieved when the equipment used by our rescuers is not just “Made in India”, but “Invented and Protected in India”. By fostering a culture of patenting among Indian startups and academic institutions, we can ensure that the NDRF is equipped with indigenous, legally secured, and globally competitive technology to continue its mission of “Saving Lives & Beyond”.

