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1

Virtual Reality Centre

CONTEXT:

Admiral Sunil Lanba, PVSM, AVSM, ADC the Chief of the Naval Staff, inaugurated the maiden 'state-of-the-art' Virtual Reality Centre (VRC) at the Directorate of Naval Design (Surface Ship Group).

ABOUT:

- This centre would provide major boost to the Indigenous warship design capabilities of Indian Navy.
- It seeks to provide impetus to self-reliance and greater fillip to warship construction under the Make in India initiative of the Indian government.
- This project will facilitate collaborative design reviews for continuous interaction between the designers and the end users to improve design and ergonomics onboard warships.
 - ➤ **Augmented Reality (AR):** An enhanced version of reality where live direct or indirect views of physical real-world environments are augmented with superimposed computer-generated images over a user's view of the real-world, thus enhancing one's current perception of reality.
 - ➤ Virtual Reality (VR): It can be referred to as immersive multimedia or computer-simulated reality which replicates an environment that simulates a physical presence in places in the real world or an imagined world, allowing the user to interact in that world.
 - ➤ **Mixed reality (MR):** It can be referred to as hybrid reality that is the merging of real and virtual worlds to produce new environments and visualizations where physical and digital objects coexist and interact in real time.
 - ► **Extended Reality (XR):** is an umbrella term encapsulating Augmented Reality (AR), Virtual Reality (VR), mixed reality (MR), and everything in between.
 - ➤ Although drawing the line between AR and VR experiences can be challenging, it is clear that many of the same underlying technologies will power revolutionary XR experiences.
 - ➤ XR will transform everyday consumer experiences and many market verticals from industrial manufacturing and healthcare to education and retail.

2

Geosynchronous Satellite Launch Vehicle (GSLV)

CONTEXT:

• The Union Cabinet, chaired by the Prime Minister has approved ongoing GSLV continuation programme Phase-4 consisting of five GSLV flights during the period 2021-2024.

- The GSLV Programme Phase 4 will enable the launch of 2 tonne class of satellites for Geo-imaging, Navigation, Data Relay Communication and Space Sciences.
- The GSLV Continuation Programme Phase 4 will meet the launch requirement of satellites for providing critical Satellite Navigation Services, Data Relay Communication for supporting the Indian Human spaceflight programme and the next interplanetary mission to Mars. This will also ensure the continuity of production in Indian industry.

Implementation Strategy and targets:

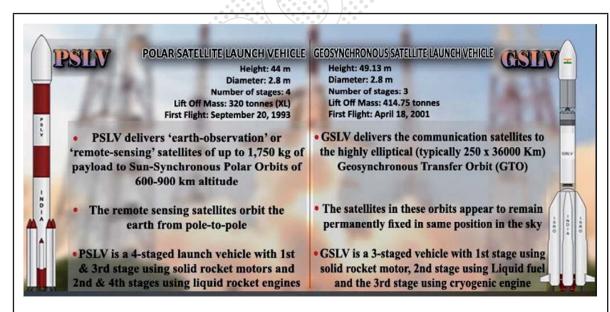
The GSLV Continuation Programme - Phase 4 will meet the demand for the launch of satellites at a frequency up to two launches per year, with maximal participation by the Indian industry. All the operational flights would be completed during the period 2021-24.

Major impact:

- The operationalization of GSLV has made the country self-reliant in the launching capability of 2 tonne class of satellites for communication & meteorological satellites.
- The GSLV Continuation Programme will sustain & strengthen the capability and self-reliance in the launching of similar satellites for national requirements including next generation navigation satellites, data relay communication satellites and interplanetary missions.

BACKGROUND:

- GSLV has enabled independent access to space for 2 tonne class of satellites to Geosynchronous Transfer Orbit (GTO). One of the very significant outcomes of the GSLV Continuation Programme is the mastering of the highly complex cryogenic propulsion technology, which is an essential technological capability to launch communication satellites to GTO. This has also paved the way for the development of a high thrust Cryogenic engine & stage for the next generation launch vehicle i.e. GSLV Mk-III.
- With the recent successful launch of GSLV-F11 on 19th December 2018, GSLV has successfully
 orbited 10 national satellites. GSLV with the indigenous Cryogenic Upper Stage has established
 itself as a reliable launch vehicle for communication, navigation and meteorological satellites and
 also to undertake future interplanetary missions.
- GSLV Continuation Programme was initially sanctioned in 2003, and two phases have been completed and the third phase is in progress and expected to be completed by Q4 of 2020-21.



GSLV Mk-III:

- ➤ The Geosynchronous Satellite Launch Vehicle Mark III is the next generation launch vehicle of ISRO which will be capable of launching four-tonne class satellites into Geosynchronous Transfer Orbit (GTO).
- ▶ It has an indigenous cryogenic third stage, designated as C25.

The C25 stage is considered as the most powerful upper stage developed by ISRO which uses Liquid Oxygen (LOX) and Liquid Hydrogen (LH2) propellant combination.

EMISAT

CONTEXT:

 Indian space agency, Indian Space Research Organization (ISRO) on April 1, 2019 launched the electronic intelligence satellite EMISAT along with 28 other satellites of global customers.

ABOUT:

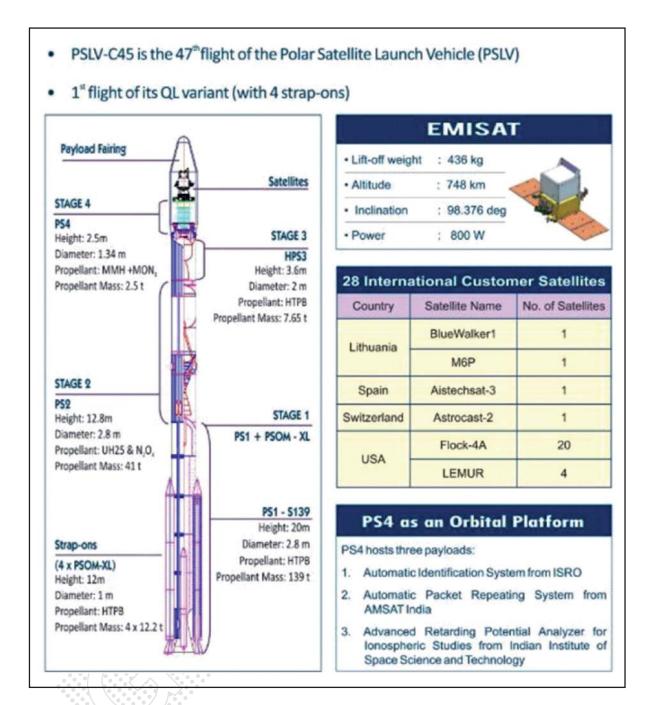
- These 28 satellites, together weighing about 220 kg, belong to Spain (1), Lithuania (2), Switzerland (1) and the United States (24). These include 20 Flock-4A satellites and 4 Lemur satellites.
- Emisat was launched into an altitude of 749 km orbit, while the 28 satellites were launched at an altitude of 504 km orbit.
- The satellites were launched aboard the PSLV-C45 from Satish Dhawan Space Center in Sriharikota, Andhra Pradesh.
- This was the 47th mission for ISRO's Polar Satellite Launch Vehicle (PSLV) Programme and was the 71st launch vehicle mission from Sriharikota.
- For the first time, ISRO invited common people to view the launch.
- With this, India became the 4th largest space power in the world. Till now, only three countries in the world – United States of America, Russia and China have achieved this.

How Do Satellites Orbit Earth?

- ▶ Most satellites are launched into space on rockets. A satellite orbits Earth when its speed is balanced by the pull of Earth's gravity. Without this balance, the satellite would fly in a straight line off into space or fall back to Earth. Satellites orbit Earth at different heights, different speeds and along different paths. The two most common types of orbit are "geostationary" (jee-oh-STAY-shun-air-ee) and "polar."
- > A geostationary satellite travels from west to east over the equator. It moves in the same direction and at the same rate Earth is spinning. From Earth, a geostationary satellite looks like it is standing still since it is always above the same location.
- ▶ Polar-orbiting satellites travel in a north-south direction from pole to pole. As Earth spins underneath, these satellites can scan the entire globe, one strip at a time.

EMISAT:

- EMISAT is meant for electromagnetic spectrum measurements. It will be released into an orbit at
- EMISAT is primarily based on the famous Israeli spy satellite called SARAL or (Satellite with ARgos and ALtika), and inherits its SSB-2 bus protocol for conducting sharp electronic surveillance across the length and breadth of India.
- The satellite would serve as the country's roving device for detecting and gathering electronic intelligence from enemy radars across the borders as it circles the globe roughly pole to pole every 90 minutes or so.



'Nirbhay' Sub-Sonic Cruise Missile

CONTEXT:

• Defence Research & Development Organisation (DRDO) successfully test fired indigenously designed & developed Long Range Sub-Sonic Cruise Missile "Nirbhay" from the Integrated Test Range (ITR), Chandipur Odisha.

ABOUT:

• It is the sixth development flight trial with objective to prove the repeatability of boost phase, cruise phase using way point navigation at very low altitudes.

- The missile took off vertically turning horizontally into desired direction, booster separated, wing deployed, engine started, cruised all the intended waypoints.
- The missile demonstrated its sea-skimming capability to cruise at very low altitudes.
- The entire flight was fully tracked by a chain of Electro Optical Tracking Systems, Radars and Ground Telemetry Systems deployed all along the sea coast.
- All the mission objectives were met.

NIRBHAY

 Type: Long range all weather subsonic cruise missile

 Used by : Indian Army Indian Navy Indian Air force

Manufactured by: DRDO

 Weight: 1,500 kg Length: 20 feet Diameter: 1.7 feet Engine : Turbofan

 Range : 2000 km – 2500 km Speed : mach o.8 – mach o.9



AUSINDEX-19

CONTEXT:

The third edition of 'AUSINDEX-19' (Australia India Exercise), bilateral maritime exercise between Indian Navy and Royal Australian Navy, began on April 2, 2019 with the arrival of Royal Australian Navy's fleet at Visakhapatnam.

- The fleet of Royal Australian Navy includes a Landing Helicopter Dock HMAS Canberra (L02), frigates HMAS New Castle (06) and HMAS Paramatta (154); conventional submarine HMAS Collins, and Durance-class multi-product replenishment oiler HMAS Success (OR 304).
- The exercise seeks to 'strengthen and enhance mutual cooperation and interoperability between the Indian Navy and Royal Australian Navy, providing opportunities for interaction and exchange of professional views between the personnel of the two navies'.
- The third edition would involve exercises in all three dimensions with focus on Anti-Submarine Warfare Systems (ASW).
- This year, the number of participating units of both the navies in the bilateral exercise is the highest till date. This increased scale of participation signifies the importance attached to the exercise.
- The exercise emphasises on India's vision of SAGAR (Security and Growth for All in the Region) and shared objectives of the two countries towards ensuring good order in the maritime domain.

6

NuGen Mobility Summit 2019

CONTEXT:

• The International Centre for Automotive Technology (ICAT) is organized a NuGen Mobility Summit, 2019, at Manesar, NCR, from 27th to 29th November 2019.

ABOUT:

- The objective of the Summit is to share new ideas, learnings, global experiences, innovations and future technology trends for faster adoption, assimilation and development of advanced automotive technologies for a smarter and greener future.
- This event will help in building a platform for bringing together all stakeholders in the automotive industry to understand global advancements in technologies.
- Experts working with leading international scientific and research organizations and testing laboratories from various countries like USA, Europe, Japan and other Asian countries will also participate in the event and share their experiences and knowledge on development of smart and green technologies and the challenges that the industry needs to overcome.
- The event aims to bring together the automotive OEMs, professionals, researchers, academic experts, vehicle system suppliers, test equipment supplier, quality managers, product planners, component developers, SAE members and students from all over the world.
- ICAT Centre-II is under brisk renovation to create a world-class state-of-the-art facility for organizing
 such significant and sizeable events for the automotive fraternity. Several kinds of tracks such as
 coast down track, oval track, abs track, hill track and flood track will be available for demonstrations
 and events.
- ICAT Manesar is a division of NATRIP Implementation Society (NATIS) under the Department of Heavy Industries, Government of India. It provides services for testing, validation, design and homologation of all categories of vehicles and has a mission to assist the automotive industry in adopting cutting edge technologies in vehicle evaluation and component development to ensure reliability, durability and compliance to the current and future regulations in new generation mobility solutions.

7

FAME II Scheme

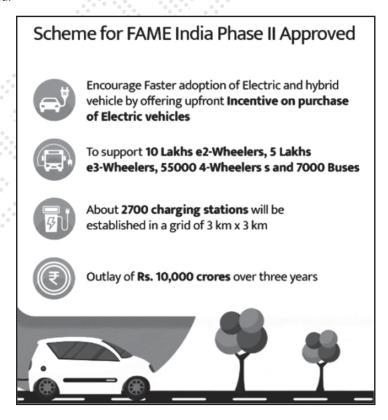
CONTEXT:

 The NITI Aayog and the Rocky Mountain Institute (RMI) released a report on opportunities for the automobile sector and government under the Faster Adoption and Manufacturing of Electric Vehicles II (FAME II) scheme.

- The technical report titled 'India's Electric Mobility Transformation: Progress to Date and Future Opportunities', quantifies the direct oil and carbon savings that the vehicles incentivized under FAME II will deliver. RMI is an Indian and global nonprofit organisation focused on driving the efficient and restorative use of resources.
- The report also quantifies the catalytic effect that FAME II and other measures could have on the overall Electric Vehicle (EV) market.
- The FAME II scheme, which was notified by the Union Cabinet in February 2019, aims to further
 accelerate the government of India's commitment to a clean mobility future, sees the electrification of
 transportation as a primary focus area. FAME IIIntends to catalyze the market for faster adoption of
 EVs to ensure durable economic growth and global competitiveness for India's automotive industry.

Key highlights from the report:

- Effects of FAME II will go beyond the vehicles that are eligible under the FAME II.
- There is considerable energy and CO2 savings associated with the two, three, and four-wheeled vehicles and buses covered by FAME II over their lifetime, as well as the potential savings associated with greater adoption levels by 2030.
- The electric buses covered under FAME II will account for 3.8 billion vehicle kilometers travelled (e-vkt) over their lifetime.
- In order to capture the potential opportunity in 2030, batteries must remain a key focal point as they will continue to be the key cost driver of EVs.
- Vehicles eligible under FAME II scheme can cumulatively save 5.4 million tonnes of oil equivalent over their lifetime worth Rs 17.2 thousand crores.
- EVs sold through 2030 could cumulatively save 474 million tonnes of oil equivalent (Mtoe) worth INR 15 lakh crore and generate net CO2 savings of 846 million tonnes over their operational lifetime.
- India needs auto industry's active participation to ease electric mobility transition. The auto and battery industries could collaborate to enhance customer awareness, promote domestic manufacturing, promote new business models, conduct R&D for EVs and components, consider new business models to promote EVs
- Government should focus on a phased manufacturing plan to promote EVs, provide fiscal and nonfiscal incentives for phased manufacturing of EVs and batteries. Different government departments can consider a bouquet of potential policies, such as congestion pricing, ZEV credits, low emission/ exclusion zones, parking policies, etc. to drive adoption of EVs.
- India's electric vehicle market is poised for growth with a blend of policies, such as FAME II, and the automotive industry's willingness to provide new mobility solutions to the citizens of the country. Such a transformation will create enormous economic, social and environmental benefits for the citizens of India.



8

PM pays tributes to the martyrs of the Jallianwala Bagh massacre

CONTEXT:

• Government of India has decided to mark the remembrance of 100 years of the historical Jallianwalla Bagh Massacre.

ABOUT:

- India observed 100 years of the horrific Jallianwala Bagh massacre, India paid tributes to all those martyred on that fateful day.
- The situation in Punjab was alarming as there were riots and protests against the Rowlatt Act.
- Punjab was put under martial law which meant that it became unlawful for more than 4 people to assemble at a place.
- The Lieutenant-Governor of Punjab at that time was Michael O'Dwyer. Lord Chelmsford was India's Viceroy.
- On the day of the festival of Baisakhi on 13th April 1919 in Jallianwala Bagh, a public garden in Amritsar, a crowd of non-violent protestors had gathered. Also among the crowd were pilgrims who had come to celebrate Baisakhi.
- General Dyer came there with his troops and blocked the only narrow entrance to the garden. Then, without warning, he ordered his troops to fire at the unarmed crowd which included children as well.
- The indiscriminate firing went on for about 10 minutes which resulted in the deaths of at least 1000 people and injured more than 1500 people.
- This tragedy came as a rude shock to Indians and totally destroyed their faith in the British system
 of justice.
- National leaders condemned the act and Dyer unequivocally.
- However, Dyer was appreciated by many in Britain and the British in India although some people in the British government were quick to criticise it.
- The government set up the Hunter Commission to inquire into the massacre. Although the commission condemned the act by Dyer, it did not impose any disciplinary action against him.
- He was relieved of his duties in the army in 1920.
- In protest against the massacre and the British failure to give due justice to the victims, Rabindranath Tagore gave up his knighthood and Gandhiji relinquished his title 'Kaiser-e-hind' bestowed on him by the British for his services during the Boer War in South Africa.
- Michael O'Dwyer, the then Lieutenant-Governor of Punjab, who had approved the actions of Brigadier General Dyer, was assassinated by Udham Singh in London in 1940 as revenge against the massacre. Udham Singh is believed to have witnessed the massacre as a child.

9

Deputy Comptroller and Auditor General in the office of Comptroller and Auditor General of India

CONTEXT:

• The Union Cabinet, chaired by the Prime Minister, gave its approval to create one post of Deputy Comptroller & Auditor General (Coordination, Communication and Information System) in Pay Level-17 (by abolishing one STS level post) in the Office of the Comptroller & Auditor General of India.

ABOUT:

- The Deputy Comptroller & Auditor General shall oversee the coordination among State Audits, audit of telecommunication and to coordinate the various Information Systems (IS) initiatives within the Indian Audit & Accounts Department (IA&AD).
- Expenditure on account of creation of this post will be Rs.21 Lakh (approx.).

Comptroller and Auditor General (CAG)

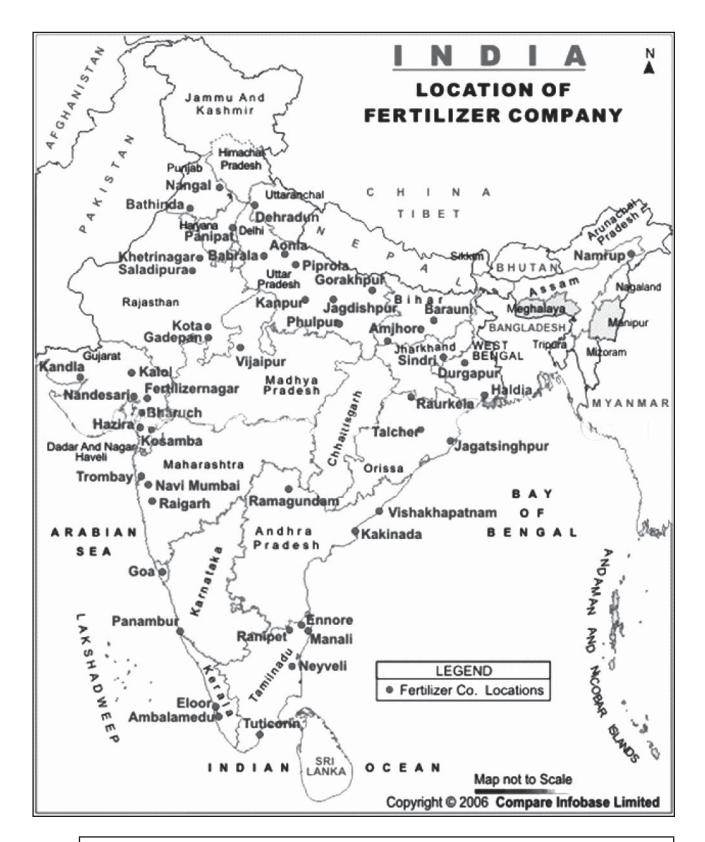
- ➤ The Comptroller and Auditor General (CAG) of India is an authority, established by the Constitution of India under article 148.
- ➤ CAG audits all receipts and expenditure of the Government of India and the state governments, including those of bodies and authorities substantially financed by the government.
- ➤ The CAG is also the external auditor of Government-owned corporations and conducts supplementary audit of government companies, i.e., any non-banking/non-insurance company in which the state and Union governments have an equity share of at least 51% or subsidiary companies of existing government companies.
- ➤ The reports of the CAG are taken into consideration by the Public Accounts Committees (PACs) and Committees on Public Undertakings (COPUs), which are special committees in the Parliament of India and the state legislatures.
- ➤ The CAG enjoys the same status as a judge of Supreme Court of India in Indian order of precedence.
- ➤ Appointment: CAG is appointed by the President of India following a recommendation by the Prime Minister. On appointment, he/she has to make an oath or affirmation before the President of India.
- ➤ Removal: The CAG can be removed only on an address from both house of parliament on the ground of proved misbehaviour or incapacity. The CAG vacates the office on attaining the age of 65 years age even without completing the 6 years term.

10 New Urea Policy-2015

CONTEXT:

The Cabinet Committee on Economic Affairs, chaired by Prime Minister has approved the proposal
of the Department of fertilizers to extend the duration of New Urea Policy-2015 from April 1, 2019
till further orders, except for the provisions which stand already amended vide notification dated
March 28, 2018.

- It will facilitate to continue operations and regular supply of urea to the farmers.
- The key objectives of the New Urea Policy 2015 are as follows:
- Maximise indigenous Urea Production to reduce import dependency and reduce subsidy burden on the government
- Promote energy efficiency to reduce Carbon-footprint (via energy efficiency) to make Urea production environment friendly. [This will be done via revised specific energy consumption norms]
- Make Urea production plant to adopt best technology available and become globally competitive.
- Timely supply of Urea to farmers at the same MRP.



Fertilizer:

Fertilizer is defined as any organic or inorganic substance, natural or artificial in nature supplying one or more of the chemical elements/nutrients required for plant growth. They provide six macronutrients and eight micronutrients to the plants for well balanced growth.

- Primary (Macro) nutrients: Nitrogen (N), Phosphorus (P), and Potassium (K), Calcium (Ca), Magnesium (Mg), Sulphur (S)
- Secondary (Micro) Nutrients: Boron (B), Chlorine (Cl), Copper (Cu), Iron (Fe), Zinc (Zn) etc.

Types:

- Nitrogenous: Essential Component Is Nitrogen (N). Ex Urea, Ammonium Nitrate, Ammonium Sulphate
- Potassic: Potassium Nitrate, Chile Saltpetre
- Phosphatic: Super Phosphate, Triple Phosphate

Neem Coated Urea:

Spraying urea with neem oil has a few benefits (Agronomic and Environmental benefits). Neem has proven nitrification inhibition properties. It slows down the process of nitrogen release from urea (by about 10 to 15 per cent). Thus, it reduces the consumption of the fertilizer, enhances the yield and decreases urea requirement.

Ceasefire with NSCN/NK, NSCN/R & NSCN/K-Khango

CONTEXT:

11

A Ceasefire is in operation between Government of India and National Socialist Council of Nagaland (Neopao Konyak/Kitovi) (NSCN/NK) and National Socialist Council of Nagaland/Reformation (NSCN/R).

- It was decided to extend the Suspension of Operation with NSCN/NK & NSCN/R for a further period of one year with effect from 28th April, 2019 i.e., till 27th April, 2020.
- This was signed on 15th April, 2019 by Joint Secretary, Ministry of Home Affairs on behalf of Government of India and Shri Jack Jimomi, Supervisor, GPRN/NSCN on behalf of NSCN/NK and by Dr. Amento Chishi, Supervisor & Shri Toshi Longkumer, Secretary on behalf of NSCN/R.
- National Socialist Council of Nagaland/K-Khango has also re-entered into a fresh Ceasefire Agreement with the Government of India with effect from 15th April, 2019 for a period of one year.

State	Name of Armed Group
	United Liberation Front of Assam (ULFA)
Assam	National Democratic Front of Bodoland (NDFB)
•	Kamtapur Liberation Organization (KLO)
	People's Liberation Army(PLA)
	United National Liberation Front(UNLF)
Maninur	Peoples' Revolutionary Party of Kangleipak (PREPAK)
Manipur	Kangleipak Communist Party (KCP)
	Kanglei Vaal Kanba Lup (KYKL)
	Manipur Peoples' Liberation Front (MPLF)

	Revolutionary Peoples' Front (RPF)
	Coordination Committee or Cor-com
Meghalaya	Hynniewt rep National Liberation Council (HNLC)
Meghalaya	Garo National Liberation Army (GNLA)
	The National Socialist Council of Nagaland (Khaplang) [NSCN/K]
Negaloud	National Socialist Council of Nagaland (Isak Muivah) INSCN(I/M) [In Ceasefire]
Nagaland	National Socialist Council of Nagaland (Kitovi-Neopaokonyak) [in Ceasefire]
	National Socialist Council of Nagaland (Reformation)INSCN(R)] (In Ceasefire)
