



REPUBLIC OF THE PHILIPPINES
REGIONAL DISASTER RISK REDUCTION AND MANAGEMENT COUNCIL MIMAROPA
Regional Disaster Risk Reduction and Management Council MIMAROPA, PEO Compound, Kumintang Ilaya, Batangas City, Philippines

MEMORANDUM

No 210 s. 2022

FOR : ALL MEMBERS OF DRRMCs AT THE REGIONAL, PROVINCIAL, CITY, MUNICIPAL LEVELS OF MIMAROPA

SUBJECT : Precaution re the Space Launch of the Long March 3B (BEIDOU-3) by the People's Republic of China

DATE : December 29, 2022

Reference:

- a. OCD Memorandum No. 866 s, 2022 dated December 29, 2022

This pertains to the information from Philippine Space Agency (PhilSA) regarding to the scheduled Space Launch of the Long March 3B (BEIDOU-3) by the People's Republic of China between 30 December 2022 to 02 January 2023. Parts of the rocket are expected to drop within the vicinity of Recto Bank approximately 138 km away from Ayungin Shoal and 200 km away from Quezon, Palawan.

Despite the relatively low risks, the actual drop zones may vary due to perturbations caused by several factors such as Earth's rotation, weather, climatic features and other factors including but not limited to rocket failures. Therefore, there is still danger and potential risks of damage to ships, aircrafts, fishing boats, and other vessels that will pass through the drop zone of the falling rocket debris. Said debris, may float around the area and may wash towards nearby coasts in the future.

Anent the above, we respectfully advised you to monitor said event and act in accordance to the following recommend actions of PhilSA:

1. The public is advised to immediately inform local authorities of any suspected debris sighted at sea or land.
2. PhilSA cautions everyone against retrieving or coming in close proximity to these material since fallen rocket debris may contain remnants of toxic substance such as rocket fuel.

For information and strict compliance.


MGEN. RUBEN L CARANDANG PAF (Ret)
Chairperson, RDRRMC MIMAROPA
Regional Director, OCD MIMAROPA, DND

Enclosure: As Stated



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF NATIONAL DEFENSE
OFFICE OF CIVIL DEFENSE

Camp Gen. Emilio Aguinaldo, Quezon City, Philippines



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MEMORANDUM

No. 966, s. 2022

TO : DIR. RUBEN L. CARANDANG
Regional Director, OCD MIMAROPA

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(BEIDOU-3) by the People's Republic of China

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Anent the above, you are hereby directed to monitor the said event and act in accordance to the following recommend actions of PhilSA:

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2. PhilSA cautions everyone against retrieving or coming in close proximity to these materials since fallen rocket debris may contain remnants of toxic substances such as rocket fuel.

For strict compliance.


USEC RAYMUNDO B. FERRER
Administrator
Office of Civil Defense



Executive Brief on the Long March 3B (Beidou-3) Chinese Space Rocket Launch

Background of the Mission and Launch

1. The People's Republic of China is scheduled to launch the Long March 3B carrying the BeiDou-3 space mission from the Xichang Space Launch Center in Xichang, Sichuan sometime between 30 December 2022 and 02 January 2023.¹
 - BeiDou is a navigational satellite system, operated by the China National Space Administration, for providing global coverage services with a targeted post-process millimeter-level accuracy.²
 - Long March 3B is a 3/4-stage launch vehicle for geostationary transfer or medium earth orbit applications. It belongs to the Long March family manufactured by the China Academy of Launch Vehicle Technology. Its fuel consists of N₂O₄/UDMH for the lower stages and LOX/LH₂ for the third stage.³ N₂O₄/UDMH is used for the fourth stage.
2. After lift off, the rocket stages usually separate in order to gain the necessary momentum as the rocket enters outer space. The discarded rocket stages are usually designed and planned to shed over specific drop zones, usually bodies of water, and are selected to minimize the hazards of falling onto populated areas.
 - For the Long March 3B rocket, these rocket stages are the *rocket boosters*, the *payload fairing*, and the *rocket core-stages*.

On the Rocket Drop Zones

3. Details of the rocket drop zones were verified in coordination with the Civil Aviation Authority of the Philippines (CAAP). Per CAAP, Notice to Airmen (NOTAM) warnings were issued by the Civil Aviation Administration of China and CAAP has disseminated these warnings accordingly. (see [ANNEX A](#))
4. The issued NOTAMs states that “**due to an aerospace flight activity**” the **flight safety in certain areas may be affected from 30 December 2022 to 02 January 2023 0400 to 1000 PhST daily**. The coordinates of the “**expected unburned debris**” impact zone are also indicated, shown in Table 1.
 - The NOTAM most likely refers to the Long March 3B (Beidou-3) launch and describes the estimated drop zones for the rocket debris.

¹ <https://forum.nasaspaceflight.com/index.php?topic=57724.0>

² <https://www.gpsworld.com/directions-2017-beidou-road-to-global-service/>

³ <http://www.cgwlc.com/launchservices/launchvehicle/lm3b.html>

Table 1. Estimated drop zones coordinates and reference NOTAM

DROP ZONE	
<i>Unburned debris expected to fall in:</i>	
<u>11 06 00N 116 54 00E</u>	
<i>And will not exceed the range within the area:</i>	
11 06 00N 117 20 00E -	
11 49 00N 116 47 00E -	
11 23 00N 116 12 00E -	
10 40 00N 116 45 00E -	

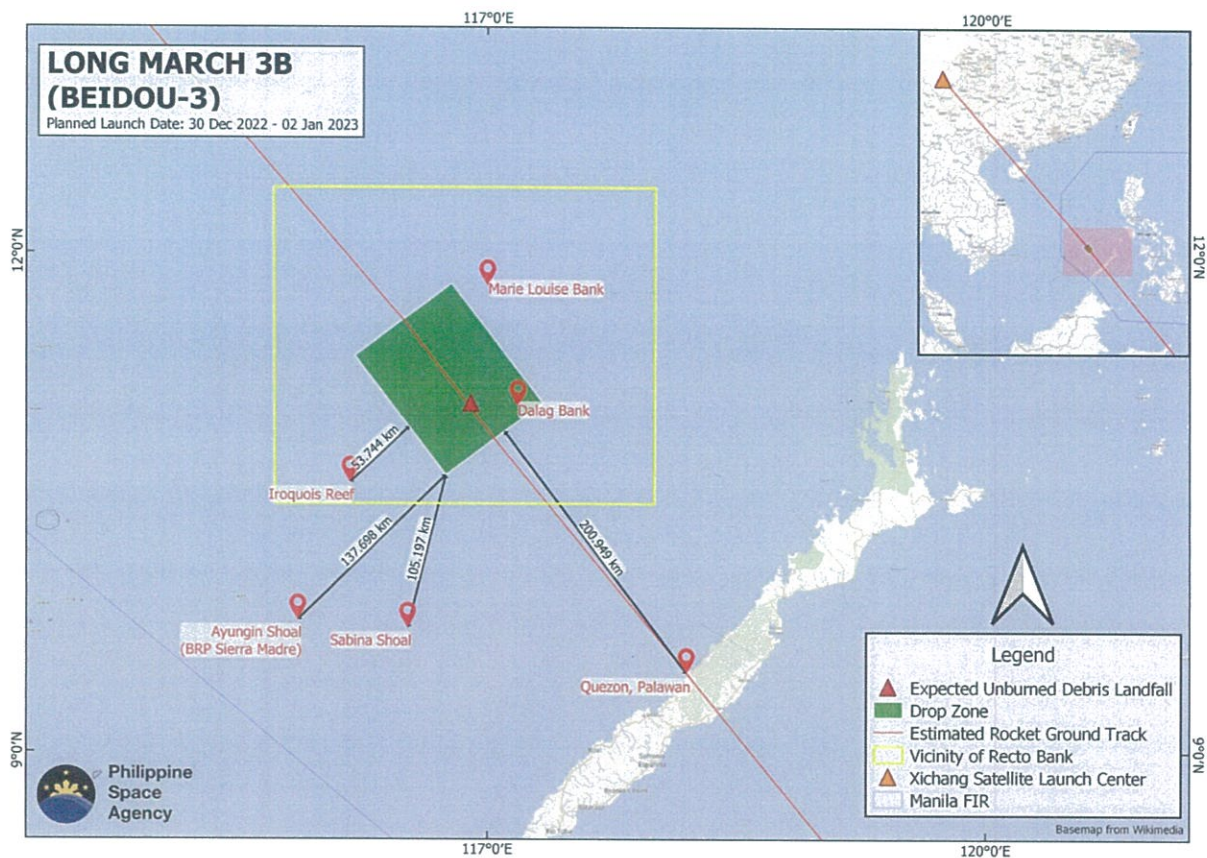


Figure 1. Estimated drop zones of the Long March 3B (Beidou-3) Launch

Concerns for the Philippines

1. Parts of this Long March 3B (Beidou-3) rocket are expected to drop within the disclosed Drop zone area, shown in Figure 1:
 - **Drop zone area is located within the vicinity of Recto Bank and its nearby features (e.g, Dalag Bank)** and is approximately 138 km away from Ayungin Shoal and 200 km away from Quezon, Palawan. Also shown are the “expected unburned debris” impact zone.
 - However, from the disclosed drop zone, **rocket debris are not projected to fall over any land feature or inhabited area within the Philippine territory.**
2. The actual drop zones, however, may vary from the expected areas due to perturbations caused by the rotation of the Earth, weather and climatic conditions, and other factors including but not limited to rocket failures.
3. Therefore, **there is still danger and potential risk of damage to ships, aircrafts, fishing boats, and other vessels that will pass through the drop zone of the falling rocket debris**
4. There is also a **possibility that the remaining rocket debris may float around the area and may wash towards the nearby coasts in the future.**
5. **The exact impact zone/s and possibility of an uncontrolled reentry of the upper stages cannot be ruled out at this time.** During the previous Long March 5B (Wentian Module) rocket launch last 24 July 2022, its *core stage* debris landed on Philippine waters in an uncontrolled reentry.⁴

Recommended Actions

1. The risk of untoward incidents and damage from falling rocket debris within Philippine territory is relatively low, however the **PhilSA recommends the following actions related to Air and Marine Access** out of an abundance of caution between **30 December 2022 to 02 January 2023**:
 - **DOTr CAAP** to sustain the enforcement of no-fly zones within the affected areas during the affected dates.
 - To ensure the safety of the public on the waters near the drop zones, the **PCG, BFAR, DILG, and DENR NAMRIA** are advised to consider temporary restrictions and the issuance of Notice to Mariners, Coastal Navigational Warnings or NAVAREA XIV warnings, as applicable, in the identified drop zones.

⁴ <https://philsa.gov.ph/news/philsa-confirms-part-of-long-march-5b-found-in-wps/>

2. The public is advised to immediately inform local authorities of any suspected debris sighted at sea or land.
3. PhilSA cautions everyone against retrieving or coming in close proximity to these materials since fallen rocket debris may contain remnants of toxic substances such as rocket fuel.

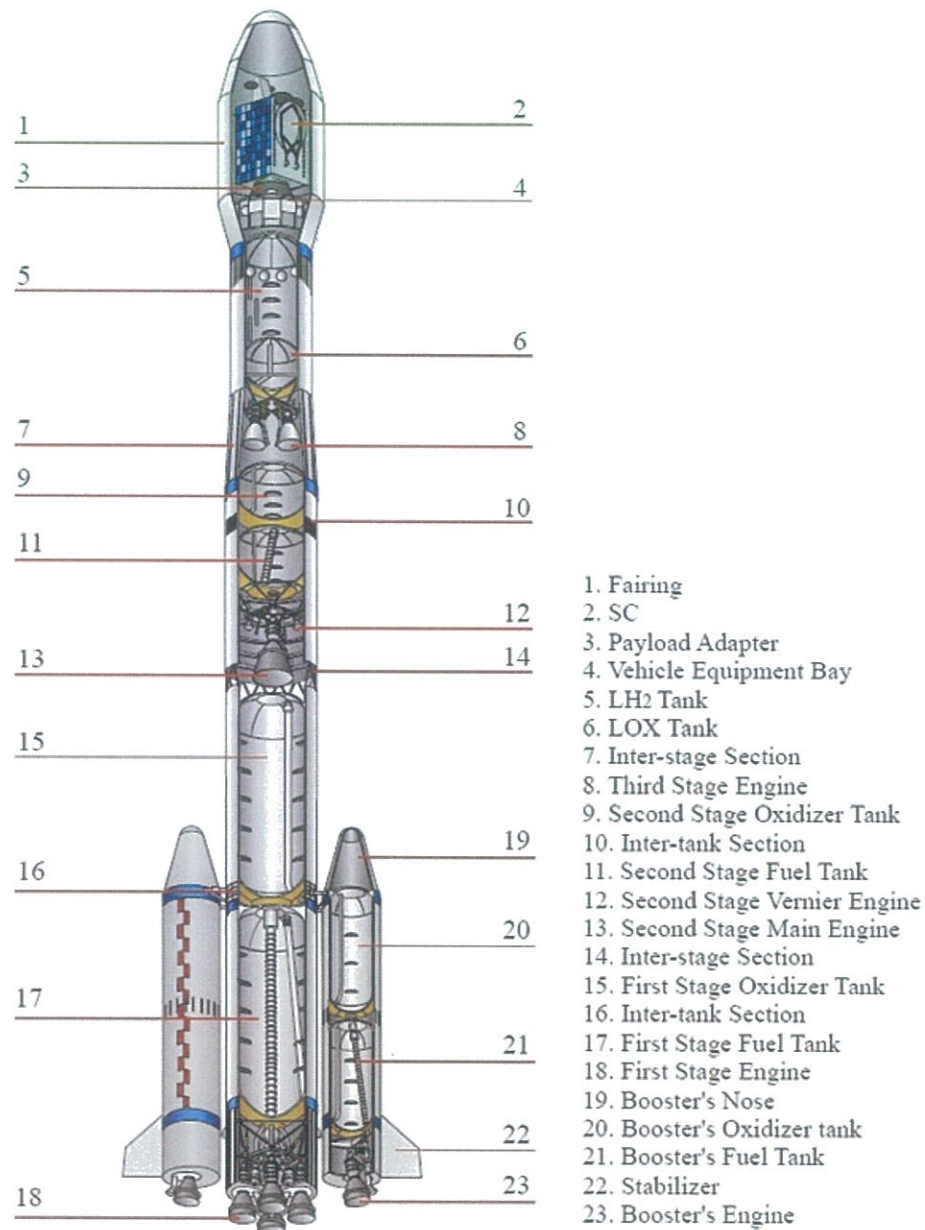


Figure 2. The Long March 3B Rocket ⁵

⁵ Image from <https://spaceflight101.com/spacerockets/long-march-3b/>