

(Joint Release)

January 17, 2025

Japan Airlines Co., Ltd.
Amami Island Drone Co., Ltd.
JDRONE Co., Ltd.

Major Earthquake Drill in Kumamoto: Large Drone Rescue Operations

Collaboration with the Self-Defense Forces for Initial Disaster Response

Japan Airlines Co., Ltd. (hereinafter "JAL"), Amami Island Drone Co., Ltd. (hereinafter "AID"), and JDRONE Co., Ltd. (hereinafter "JDRONE"), in cooperation with Yamaha Motor Co., Ltd. (hereinafter "Yamaha Motor"), participated in the FY2024 Kumamoto Prefecture Comprehensive Disaster Drill (hereinafter "the Drill") on December 18-19, 2024. Rescue operations using large drones for initial disaster response were conducted.

The drill assumed that land routes to the Amakusa region were severed due to a large-scale earthquake. While large-scale support from sea and air was planned, drones were used for reconnaissance flights to relay real-time disaster information to headquarters and to transport relief supplies landed by the Self-Defense Forces to isolated islands.

Participation in the planning of the Drill from the beginning was undertaken, proposing roles that leverage the performance and operational capabilities of large drones. An operation that seamlessly integrates "disaster situation confirmation by drones, formulation and implementation of initial response measures by the Self-Defense Forces and others, and last-mile transportation by drones" was demonstrated.

Efforts will continue to strengthen regional disaster prevention capabilities using drones in collaboration with both public and private sectors.



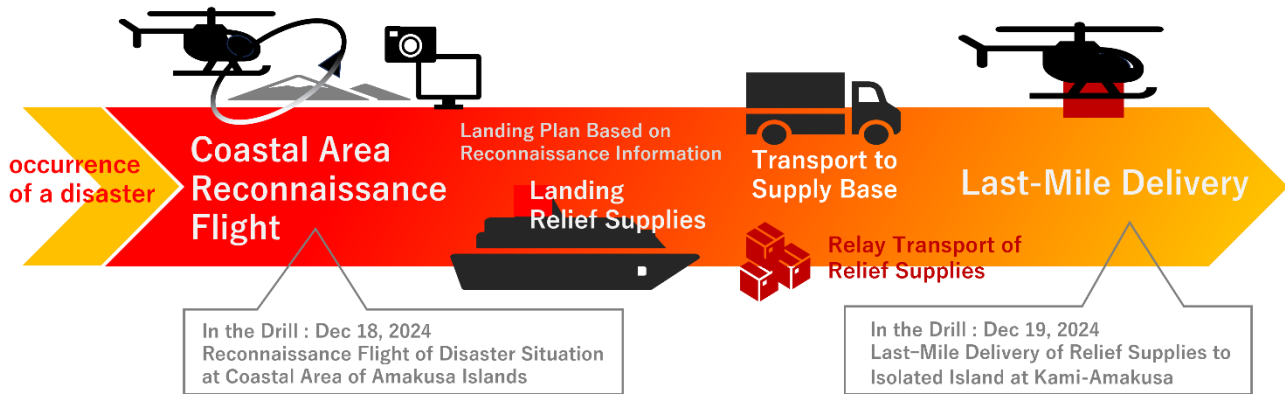
■Role of the Drone in the Drill

In past earthquakes such as the "2016 Kumamoto Earthquake" and the "2024 Noto Peninsula Earthquake," there has been a recognized need to strengthen the ability to secure rescue access from the coast, understand the overall disaster situation immediately after the event, and provide last-mile delivery to isolated areas cut off by land routes. Additionally, for a large drone capable of long-distance flight and heavy cargo transport, it is necessary to establish an operational system, including remote control, during normal times (phase-free). Unplanned emergency deployments remain challenging, highlighting ongoing issues in the effective use and role of drones in disaster response.

Given these challenges, the Drill aimed to have a private large drone conduct extensive reconnaissance flights immediately after the disaster, allowing the command center to understand the disaster situation in real-time and formulate initial response measures. The scenario included low-altitude aerial photography of the Amakusa Islands coastline (approximately 200 km in circumference) to identify accessible coastal areas for the Maritime Self-Defense Force's landing plans. Relief supplies

were relay-transported from the Maritime Self-Defense Force to the Ground Self-Defense Force and then to the private drone, with the large drone handling the last-mile delivery to isolated islands.

The Roles of Large Drones in Relief Operations During the Initial Phase of Disasters



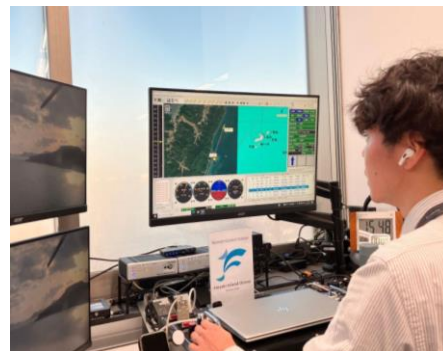
■ Drone Operational System in the Drill

Under the comprehensive coordination of JAL, AID provided the drone equipment and the remote operators, while Yamaha Motor and JDRONE supported the operations.

In November 2023, AID, a drone operation company jointly established by Setouchi Town in Amami and JAL, began operations. Currently, AID uses the large drone "FAZER R G2" manufactured by Yamaha Motor (hereinafter "FAZER R G2") as its main aircraft. During normal times, AID conducts regular transportation of daily necessities, and during disasters, it engages in reconnaissance and transport of relief supplies, operating a "phase-free" drone business. The remote control base station for this drill was set in Tokyo (the base station for AID's regular operations) to ensure it was in a non-affected area.

JDRONE leveraged its experience and knowledge from its solution business in crisis management and disaster fields, including radioactive material monitoring at the Fukushima Daiichi Nuclear Power Plant accident using the FAZER R G2. In this drill, JDRONE provided on-site operational support.

Yamaha Motor utilized its technical information and experience gained from its activities in manufacturing unmanned aerial vehicles and long-distance flight operations. For this drill, Yamaha Motor conducted pre-flight plan verification and provided on-site operational support.



Drone Operation: Amami Island Drone

Equipment Used: FAZER R G2 by Yamaha Motor

Operation Mode: Remote Operation, Level 3.5 Utilizing LTE and Satellite Communication

Remote Station: Shinagawa, Tokyo (JAL Office)

■Reconnaissance Flights for Disaster Assessment

(Dec 18, 2024: Kami-Amakusa City, Amakusa City, Reihoku Town)



- Conducted low-altitude reconnaissance flights over the coastal areas of the Amakusa Islands, assuming disaster scenarios.
- The Prefectural Disaster Response Headquarters monitored aerial footage in real-time.

■Last-Mile Delivery of Relief Supplies to Isolated Islands

(Dec 19, 2024: Kami-Amakusa City)



- Relief supplies landed by the Japan Maritime Self-Defense Force's air-cushion vehicle are transported by land to the drone departure point (Hiai Fishing Port).
- The supplies are received from the Japan Ground Self-Defense Force, loaded onto the drone, and delivered to the isolated island of Hinoshima.

< Reference >

Press Release, Feb 29, 2024

Amami Setouchi Town and JAL Establish Joint Drone Operation Company "Amami Island Drone Co., Ltd."

<https://press.jal.co.jp/en/release/202402/007942.html>