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1. Configuration and progress of investigation

As soon as it became aware of this misconduct in testing, the Company established an internal investigative committee under the direction of the Quality Assurance Division to examine the matter from a third-party perspective .

The implementation of corrective measures in response to the misconduct in testing described in 2.1 (1)

Kawasaki Heavy Industries, Ltd.

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Ocean Development and Environment Policy Division,
Shipbuilding and Ship Machinery Division,
and Inspection and Measurement Division,
Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism

Kawasaki Heavy Industries, Ltd.

**Report on Investigation into Misconduct in the Testing
of Marine Engines (Interim Report)**

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1. Overview

On July 5, 2024, Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT) requested that Kawasaki Heavy Industries, Ltd., conduct a fact-finding investigation into whether there had been misconduct in nitrogen oxide (NOx) emissions verification tests for its marine engines. The Company responded by launching an internal investigation of such engines, which are subject to International Maritime Organization (IMO) Tier I and other regulations governing NOx emissions from marine engines. This investigation uncovered misconduct—namely, the alteration of data—during shop trials, including in verification tests for NOx emissions.

This interim report summarizes the findings of the Company's internal investigation to date, as well as the corrective measures implemented in areas where misconduct was uncovered. The results of investigations into the impact of this incident on NOx emissions so far, along with an analysis

3.2.2 Motive behind the Adjustment Subsequent to Calibration or Unauthorized Operation

It is believed that the main motive behind the adjustment subsequent to calibration or unauthorized operation was to maintain and improve the accuracy of measurements despite the constraints imposed by existing measuring equipment.

3.3 Impact on NOx Emissions

Compliance with NOx emissions regulations is currently being confirmed for specific engines ("parent engines") for which records regarding the alteration of fuel consumption exist, based on the Company's calculations. (Subsequently manufactured engines based on a parent engine are called "member engines.")^{*1} If NOx emissions

from NOx emissions regulation values.

- Category B: Alteration of data was found, but actual measured values did not deviate from NOx emissions regulation values.
- Category C:

Investigations will continue with the aim of confirming actual measured values that make it possible for the Company to calculate NOx emissions. If no such values can be confirmed, the Company will cooperate with relevant organizations to explore technical approaches to determining compliance with NOx emissions regulations.

If confirmed actual measured values deviate from NOx emissions regulation values, discussions will be held with relevant organizations, as well as with customers, on how to ensure compliance.

In the absence of confirmed actual measured values, possible approaches include:

- (1) using actual measured values that are confirmed for engines with the same specifications or equivalent NOx emissions, and
- (2) using actual measured values in internal shop trials subsequent to shop trials for identical engines.

If values thus yielded deviate from NOx emissions regulation values, the approach described in 4.2 will be explored.

5. Actions Taken in Response to Investigation Findings

Based on the findings of the Company's investigation to date, implementation of the corrective

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5.1.4 Adjustment of Amplifiers for Water Brake Torque Indicators Subsequent to Amplifier Calibration

Alteration

The gain dials of load cell amplifiers (mounted in control panel doors) used to adjust water brake torque were adjusted subsequent to calibration.

Objective

This was done to adjust displayed torque to reduce variations in water brake torque based on the engine output, which is estimated using, for example, in-cylinder pressure.

Opportunity for adjustment

Load cell amplifiers could be adjusted subsequent to calibration and prior to individual shop trials. Moreover, there was a lack of sufficient awareness of the impropriety of using another method of measurement after calibration.

Corrective measures

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data is not altered.

5.2 Reasons for the Failure to Detect Issues and Corrective Measures Implemented

Although a limited number of individuals were aware of the alteration of test data, as well as the adjustment of amplifiers subsequent to calibration or for other-than-intended purposes, the internal company failed to detect these issues or to take corrective action.

The alteration of test data, as well as the adjustment of amplifiers subsequent to calibration or for other-than-intended purposes, began because data obtained during shop trials failed to meet customer specifications. Moreover, shop trial reports were compiled and issued by the design department, while the quality assurance department only checked for deficiencies in the reports themselves, but did not perform in-depth checks of the shop trial process.

Going forward, the quality assurance department will confirm that there have been no opportunities for misconduct in the shop trial process, while shop trial reports will only be issued after the quality assurance department has verified the validity of data.

In addition, the Quality Assurance Division, which is independent from business activities, will oversee quality assurance across the internal companies. This body will conduct internal audits and take other steps to further strengthen the Company's ability to detect the alteration of test data, as well as the alteration of data subsequent to calibration or for other-than-intended purposes.

5.3 Confirmation of the Effectiveness of Corrective Measures

Auditors from the Quality Management Section—a subordinate entity of the Quality Assurance Division—who play no direct role in product inspections in the internal companies, confirmed implementation of the corrective measures outlined in 5.1 and 5.2 from a third-party perspective and verified the effectiveness thereof.

5.4 Supplementary Investigation of Water Brakes

The torque displayed by the water brakes varied across engines of the same model as a consequence of differences in the water brakes themselves. To reduce such varc (an)-1227 Td(26(h v)-2 (e

6. Status of Efforts to Analyze Causes and Prevent Recurrence

6.1 Issues Related to Internal Company Compliance Awareness and Corporate Culture

Based on the findings of the investigation to date, it is believed that the engine design department was under pressure to meet the fuel consumption performance of engines. The internal company was found to have committed misconduct in testing at performance testing for which it was responsible.

In the past, the issue of misconduct in testing had been raised by individuals in charge with their then-managers. When the Company conducted a Groupwide investigation into quality-related misconduct triggered by similar incident at a Group company in fiscal 2022, it was discovered that individuals involved in the design, manufacture and inspection of marine engines were aware of that particular misconduct. However, the internal company failed to fully grasp that this misconduct in testing was occurring or to take corrective action.

At this point, it is believed that the following issues related to compliance awareness and corporate culture have contributed to this state of affairs:

- (1) A corporate culture that discourages reporting (or acknowledging) incidents, even if they are recognized as compliance violations.
- (2) Organizational dysfunction regarding compliance.
- (3) A sense that delivery time and profitability must be prioritized over quality.
- (4) A corporate culture that emphasizes following precedent rather than making improvements, even when it comes to the alteration of test data, alteration of data subsequent to calibration and alteration of data for other-than-intended purposes.
- (5) A lack of customer perspective that leads to the justification of falsifying quality records.

6.2 Wide-Ranging Efforts to Prevent Recurrence

Looking ahead, the Company will further scrutinize the factors that contributed to this misconduct in testing and will take bold steps

properly monitor business activities, including quality assurance.