March 28, 2018

Company Mitsubishi Materials Corporation
Representative Akira Takeuchi, President
(Securities Code: 5711 on the First Section of the Tokyo Stock Exchange)
Inquiries to: Nobuyuki Suzuki, General Manager, Corporate Communications Dept., General Affairs Dept.
(TEL: 03-5252-5206)

To: All

Special Investigation Committee Final Report Relating to Non-Conforming Products at MMC Subsidiaries

Mitsubishi Materials Corporation ("MMC") sincerely apologizes for the difficulties that we have caused to all concerned parties, including our customers and shareholders, in connection with Mitsubishi Cable Industries, Ltd.'s, Mitsubishi Shindoh Co., Ltd.'s, Mitsubishi Aluminum Co., Ltd.'s ("MAC"), Tachibana Metal Mfg Co., Ltd.'s, and Diamet Corporation's ("DM") delivery of products that deviated from customer or internal specifications ("Non-Conforming Products") due to misconduct, including the rewriting of data. Mitsubishi Cable Industries, Ltd., Mitsubishi Shindoh Co., Ltd., MAC, Tachibana Metal Mfg Co., Ltd., and DM are consolidated subsidiaries of MMC.

We would like to report that MMC's Board of Directors received the final report from Special Investigation Committee today (Attachment). Please see "Formulation of MMC Group Governance Framework Enhancement Measures, etc." announced today for details of the MMC Group's governance enhancement measures, etc.

END

Direct any questions to:
Corporate Communications Department, General Affairs Department, Mitsubishi Materials Corporation
TEL: 03-5252-5206
General Affairs Department, Mitsubishi Aluminum Co., Ltd. (including any questions relating to Tachibana Metal Mfg. Co., Ltd.)
TEL: 03-3769-0111
General Affairs Department, Administrative Division, Diamet Corporation
TEL: 025-275-0111

Attachment

March 28, 2018
Special Investigation Committee
Mariko Tokuno, Chairperson

Final Report

1. Background

Mitsubishi Materials Corporation ("**MMC**") discovered that certain products produced and sold in the past by Mitsubishi Shindoh Co., Ltd. ("**MSC**") and Mitsubishi Cable Industries, Ltd. ("**MCI**") were shipped that deviated from customer or internal specifications ("**Non-Conforming Products**") due to the rewriting of inspection records data and other misconduct ("**Misconduct**") (this "**Matter**"). Given such circumstances, based on a resolution by its Board of Directors on December 1, 2017, MMC commissioned a special investigation committee ("**Committee**"), the majority of which consists of outside directors and outside experts, to conduct the investigation of this Matter and other related tasks.

The Committee received an investigation report dated December 27, 2017 from the MSC Investigation Committee, an interim investigation report dated December 27, 2017 from the MCI Investigation Committee, and a report titled "Restructuring Measures of the Governance Framework for Quality Control in the MMC Group" from MMC on December 27, 2017, and submitted to MMC's Board of Directors an interim report, dated December 28, 2017 ("**Interim Report**"). In addition, on February 19, 2018 the Committee also received an investigation report dated February 19, 2018 from the MCI Investigation Committee, and submitted to MMC's Board of Directors a second interim report, dated February 20, 2018 ("**Interim Report (2)**") setting forth the opinion of the Committee.

Meanwhile, the ISO9001 certification of Mitsubishi Aluminum Co., Ltd. ("**MAC**"), a subsidiary of MMC, was temporarily suspended by the Japanese Standards Association on December 25, 2017 for reasons including that they could not confirm the effectiveness of the remedial measures. Further, MAC's JIS certifications were revoked by the Japan Quality Assurance Organization on January 12, 2018 for the reason that testing of certain products was not conducted in accordance with the procedures set by the JIS.

Given such circumstances, MMC conducted a special audit by the Internal Audit Department and others, and it was discovered that MAC had delivered Non-Conforming Products, and that Tachibana Metal Mfg Co., Ltd. ("**TKC**"), MAC's subsidiary, had also delivered Non-Conforming Products.

It was also discovered through a report to an external hotline for employees, that Diamet Corporation ("**DMC**"), also a subsidiary of MMC, had delivered Non-Conforming Products.

These circumstances led the Committee to determine that investigation was

necessary with regard to the MAC matter (including the issues related to the incidents that occurred at its subsidiary TKC) and the DMC matter mentioned above in light of the purposes of the Committee, and decided to additionally commission Nishimura & Asahi to investigate the facts, determine the root causes, and formulate preventive measures.

The Committee has just received from Nishimura & Asahi the "Investigation Report (Concerning the misconduct at Mitsubishi Aluminum Co., Ltd. and subsidiary management issues)" as of March 27, 2018 (as attached hereto as Annex 1; hereinafter referred to as "MAC Investigation Report") and the "Investigation Report (Concerning the actual state of the framework for quality control of sintered products at the Niigata Plant of Diamet Corporation)" as of March 27, 2018 (as attached hereto as Annex 2; hereinafter referred to as "DMC Investigation Report") respectively. The Committee has also received from MMC a report on the details and progress of the extraordinary quality audit conducted in the MMC Group and an explanation on the proposed measures to enhance its group governance framework. Therefore, the Committee hereby provides MMC's Board of Directors with this report in which our opinion with respect to the above-mentioned reports, etc. is set forth.

2. Status of Activities

1) Status of Committee activities since submission of the Interim Report (2)

February 28 (Tuesday)	9:25 AM to 12:25 PM	9th Committee meeting
March 9 (Friday)	4:00 PM to 5:50 PM	10th Committee meeting
March 14 (Wednesday)	12:59 PM to 2:30 PM	11th Committee meeting
March 19 (Monday)	2:57 PM to 4:35 PM	12th Committee meeting
March 23 (Friday)	9:53 AM to 11:00 AM	13th Committee meeting

(Note) Aside from the activities listed above, the following on-site visits were conducted.

Diamet Corporation (February 21: Watanabe and Ono (Committee members); March 1: Tokuno (Chairperson) and Ono (Committee member); March 7: Takenaka (Committee member)

3. Opinions of the Committee (summary)

1) The Committee's opinion on the MAC investigation report

The MAC investigation report cites the following root causes of the Misconduct:

(1) Low awareness of compliance with specifications;
(2) Attitude excessively prioritizing "receipt of orders" and "delivery dates";
(3) Pressure on personnel in charge of product;
(4) Harmful effects of the vertically-segmented organizations;
(5) Failure to thoroughly familiarize employees with necessary knowledge; and
(6) Dependence on existing practices without careful consideration.

In addition to these six points, the report also cites as issues the fact that, in association with the matter arising at TKC, there were issues with the management of subsidiaries and MAC should have more sufficiently reviewed the issues at its subsidiary as a red flag, but failed to use them as an opportunity to review itself. These opinions are shared by the Committee.

In particular, at MAC and TKC, multiple departments carried out the similar types of Misconduct in parallel, and when it was discovered in 2016 that test result data for sheet and plate products were being rewritten at MAC pursuant to internal standards, recurrence prevention measures were formulated and implemented. These prevention measures, however, predominantly only addressed preventing the Misconduct in connection with the aforementioned standards, and did not serve as a catalyst for discovery and eradication of other types of misconduct at MAC and TKC. As pointed out by most employees in the course of the investigation, such circumstances were believed to be rooted in MAC's corporate culture, including the strong consciousness of its vertical organization, etc. Therefore, the Committee is of the opinion that fundamental reform of the corporate culture is also indispensable when executing more effective recurrence prevention measures.

Going forward, MAC and TKC need to take the results described in the MAC investigation report seriously, and move urgently to implement recurrence prevention measures to ensure that similar issues do not reoccur. As the parent company, MMC must also put in place necessary internal control measures for the group, and ensure that MAC and TKC swiftly and properly implement recurrence prevention measures.

2) The Committee's opinion on the DMC investigation report

The earlier Misconduct matter at DMC ("**Earlier Matter**") was recognized internally at DMC around in the summer of 2016, triggered by a report from a whistleblower. An investigation was conducted with the help of MMC, and from March 2017 recurrence prevention measures were drafted, formulated and implemented based on the results of the investigation.

During that period, additional whistleblower report was received in January 2018, and when MMC investigated the matter, it discovered that misconduct was still being continued ("**Later Discovered Matter**").

Due to this background, the Committee regards the Misconduct issues described in the DMC investigation report as being a serious problem.

The DMC investigation report indicated the following six points as the root causes of the Misconduct at DMC, and this opinion is shared by the Committee.

(1) Order intake and mass production of specifications that exceeded its process capability;

(2) Process capability to manufacture products that satisfied customer specifications deteriorated;

(3) Quality assurance framework was deficient;

(4) Insufficiency of manpower and equipment for inspection;
(5) Pressure of delivery date and pressure on the inspection departments from other departments; and
(6) Reduction in the consciousness for quality.

According to the DMC investigation report, DMC restricted investment in facilities and human resources in order to ensure profits while also undertaking initiatives to increase the number of orders received. This led to a vicious cycle where accepting product orders exceeding production capacity increased the number of Non-Conforming Products produced, which in turn increased the costs incurred due to addressing Non-Conforming Products, and ultimately resulted in a decline of operating results.

In addition, all of DMC's departments were occupied with the day-to-day demand for supply of products, and were unable to carry out substantial reforms such as ensuring that production capacity was commensurate to orders received, and it was found that there was a lack of appropriate communication between sales and production departments as well.

It is believed that as this situation continued, each department's attention to quality was reduced, which resulted in the Misconduct being continued for a long time.

The Committee believes that when executing recurrence prevention measures, DMC must ensure that its production capacity duly commensurates with orders received, and must undertake initiatives to further thoroughly make progress in the reform for quality consciousness at all levels, from management through to employees.

Furthermore, the Committee has to describe DMC's former president and full time directors allowing the shipping of Non-Conforming Products even after they became aware of the Later Discovered Matter as lacking the sense of risk awareness regarding quality that is essential for managers in a manufacturing business. The Committee is of the opinion that they should be subject to appropriate disciplinary action.

Going forward, DMC needs to take the results described in the DMC investigation report seriously, and move urgently to implement recurrence prevention measures to ensure that similar issues do not reoccur. As the parent company, MMC must also take seriously the fact that the Misconduct continued despite recurrence prevention measures were implemented by DMC after March 2017. MMC must put in place necessary internal control measures for the group, and ensure that DMC swiftly and properly implements recurrence prevention measures.

3) Extraordinary quality audit

In November 2017, MMC conducted a quality audit through documentary review regarding all of its plants and subsidiaries (with the exception of MSC, MCI, MAC, and TKC). Subsequently, however, in response to the discovery of Non-Conforming Product issues caused by Misconduct at MAC and DMC, MMC decided to conduct an extraordinary quality audit through on-site visits of 119 facilities of MMC and its group

companies, starting in February 2018.

As part of this extraordinary quality audit, MMC's Internal Audit Department and outside experts visited each facility, and conducted an investigation using methods such as checking all reports on occurrence of irregularities and comparing customer specifications with the actual inspection results reports. The Committee is of the opinion that this audit is an effective method of identifying Misconduct like that discovered at MMC's subsidiaries so far.

As of March 23, MMC and outside experts reported to the Committee that the extraordinary quality audit had been completed for 91 of the 119 facilities subject to the audit, and although some subsidiaries had quality control methods that needed some items to be revised, these items had already been remediated, and the issues were being dealt with, such as by notification of customers and other relevant parties. Furthermore, at present, the Committee has received no report of any circumstances requiring large-scale cooperation with customers to confirm safety, such as has taken place in this Matter discovered at subsidiaries so far.

Going forward, the Committee plans to confirm the final results and handling of the extraordinary quality audit.

4) Enhancement measures for group governance framework

The Committee also studied the group governance framework enhancement measures proposed by MMC in response to this Matter (including the Mitsubishi Materials Group Basic CSR Regulations as of April 1, 2018 and Operational Rules for Consolidated Management scheduled to be disclosed at the meeting of the Board of Directors to be held on March 28, 2018).

These governance framework enhancement measures have been formulated based on reflection regarding the recent series of events in this Matter, seek to strengthen the framework so that three points – communication, compliance framework and awareness, and allocation of resources relating to governance – recognized as issues for the MMC group, are performed more appropriately, and the Committee regards them as appropriate as a recurrence prevention framework to prevent governance issues, as well as quality issues, from occurring.

The Committee would like to reemphasize the importance of MMC not just putting in place frameworks, but also operating them closely in line with the original objectives and continuing to revise them on an ongoing basis in future.

Furthermore, the Committee is of the opinion that in order to reform a corporate culture that allowed Misconduct to continue at multiple offices, etc., albeit with differing backgrounds, in this Matter, MMC must ensure through education measures that all employees throughout the group are of the enhanced belief that succeeding to and continuing the misconduct of one's predecessor or breaching compliance is unacceptable, no matter the circumstances, and that it is misconduct of the same seriousness as starting the practice oneself.

5) Conclusive remarks

MMC had been carrying out various measures, based on the understanding that reforming the corporate culture of all group companies and strengthening governance is essential, but in terms of results, given the fact that MMC failed to discover and remediate the Misconduct earlier, it has to be stated that timeliness of required reactions was insufficient in some ways. The Committee believes that MMC's management needs to acknowledge the nature of these facts in a serious manner, and endeavor to prevent future recurrence with a further stronger risk awareness.

In other words, the Committee strongly urges MMC's management to continue to strive to recover the confidence of customers and other stakeholders by working with further enhanced risk awareness and in a more timely manner the fact finding through the thorough investigation conducted by outside experts and group governance enhancement, etc. measures, including quality management, based on such fact finding which MMC has been carrying out since discovery of the Misconduct.

END

Annex 1

To: Special Investigation Committee of Mitsubishi Materials Corporation

March 27, 2018

Investigation Report

(Concerning the misconduct at Mitsubishi Aluminum Co., Ltd. and subsidiary management issues)

Nishimura & Asahi

Attorney Takashi Shibuya

Attorney Ryutaro Nakayama

Attorney Hidetoshi Matsumura

Attorney Takako Misaki

Attorney Jisuke Tomiya

Attorney Yuto Takabayashi

Attorney Eisuke Kunimoto

Attorney Yuko Nakazawa

Attorney Asaki Nishida

Attorney Takahiro Miyazaki

This is a report on the investigations ("**Investigation**") Nishimura & Asahi is currently conducting that was commissioned by the Special Investigation Committee ("**MMC Special Investigation Committee**") established by Mitsubishi Materials Corporation ("**MMC**").

This report summarizes the results of the investigation, analysis, etc. that were conducted as much as possible and believed to be appropriate within the given time and conditions, and there is a possibility that the conclusions or other aspects will change if new facts or other details are discovered. Please also be aware that this report does not guarantee any judgment of the courts or decisions of other relevant regulators.

Table of Contents

Page

Chapter 1 Overview of the Investigation

Section 1 Circumstances leading to the Investigation and the Purpose of the Investigation

1 Circumstances leading to Discovery of Misconduct at MAC, and Circumstances leading to and the Purpose of the Investigation

With respect to Mitsubishi Aluminum Co., Ltd.'s ("**MAC**") quality assurance framework, an internal audit conducted by MAC, which was driven by a quality audit performed by MMC led to the discovery in November 2016 that some products shipped from MAC's Fuji Plant ("**Fuji Plant**") that deviated from standards agreed with customers ("**Non-Conforming Products**") had involved rewriting of test data pursuant to informal internal rules (referred to as Concession Measure Implementation Rules) and such Non-Conforming Products were then shipped to the customer as if those products duly conformed to the customer specifications ("**Earlier Case**"). After this discovery, MAC reported the Earlier Case to MMC, and began to explain the facts in sequence to each of the customers to whom the relevant products were sold and conduct safety confirmation work with those customers, conducted an investigation into the facts and root causes, and formulated and implemented recurrence prevention measures based on the investigation.

On November 23, 2017, MMC made a public announcement regarding MAC's shipping of the Non-Conforming Products, which resulted in the Japanese Standards Association (JAS) conducting an extraordinary review of MAC regarding ISO 9001 certification on December 9, 2017. As a result of that review, MAC had its ISO 9001 certification temporarily suspended as of December 25, 2017 on the grounds such as that they were unable to confirm the effectiveness of remedial measures regarding the Earlier Case yet. In addition, MAC was subject to an extraordinary review by the Japan Quality Assurance Organization (JQA) on December 18 and 19, 2017, which resulted in MAC's JIS H 4000 and JIS H 4100 certifications being revoked as of January 12, 2018. In light of these circumstances, MMC conducted a special audit of the Fuji Plant from December 25, 2017 to January 28, 2018. This special audit led to the discovery of facts such as that MAC had been rewriting test data pertaining to Non-Conforming Products in different manners from those demonstrated in the Earlier Case, and that MAC had been performing inspections that did not conform to Japanese Industrial Standards (JIS) or customer specifications, etc. (the series of acts, such as rewriting of test data for Non-Conforming Products in a form that differs from the Earlier Case, including the facts discovered after the commencement of the Investigation, are hereinafter referred to as "**Misconduct**").

Based on the process discussed above and taking into account the gravity of the series of circumstances, the MMC Special Investigation Committee determined that it would be necessary to perform a thorough investigation from an objective and neutral perspective, so it requested Nishimura & Asahi to conduct an investigation and review with the following objectives:

(i) Investigate the quality management framework at MAC;

(ii) Analyze the root causes and background circumstances based on the fact finding as a result of (i) above; and

(iii) Propose measures to prevent recurrences based on the analysis of (ii) above.

2 Circumstances leading to the Discovery of Misconduct at TKC, and Additional Targets and Objectives of the Investigation

In parallel with the circumstances described above, MAC began conducting an extraordinary quality audit of its subsidiaries from February 2017, as part of MMC's quality audit. This extraordinary quality audit led to the discovery on February 20, 2017 of the fact that Non-Conforming Products were also shipped from Tachibana Metal Mfg Co., Ltd.'s ("**TKC**") Yoro Plant ("**Yoro Plant**") after having their test data rewritten ("**Earlier Case (TKC)**"). After making this discovery, MAC reported the Earlier Case (TKC) to MMC, and directed TKC to stop shipment of Non-Conforming Products. Upon the issuance of this direction, TKC ceased shipment of Non-Conforming Products, established a response furtherance team, and began investigating the root causes and addressing the issue involving customers. MAC also directed TKC to check whether there were facts in the Earlier Case (TKC) that would constitute a violation of JIS requirements, following which TKC conducted an investigation and discovered the existence of such violations. Therefore, on July 24, 2017, TKC reported the Earlier Case (TKC) to the Japan Testing Center for Construction Materials ("**JTCCM**") as a violation of JIS.[1]

Based on the fact that MMC discovered Misconduct in its special audit of MAC, as discussed above, MMC also conducted a special audit of TKC from January 15, 2018 to January 22, 2018. This special audit lead to the discovery of facts such as that test data for Non-Conforming Products had been rewritten and inspections that did not conform to the JIS requirements or customer specifications had been performed as well at the Yoro Plant, in different manners from those demonstrated in the Earlier Case (TKC) ("**Misconduct (TKC)**"). Therefore, at the request of the MMC Special Investigation Committee, Nishimura & Asahi also conducted an investigation and review of TKC's quality control framework and the actual state of the Misconduct as part of our investigation of (i) above. Based on our findings, we also examined issues and remedial measures regarding MAC's subsidiary management framework in our analysis of the root causes and background circumstances of (ii) above and proposal of measures to prevent recurrences of (iii) above.

Section 2 Progress on the Investigation

1 Overview of the Investigation and Investigation Framework

Based on the circumstances described in Section 1 above, Nishimura & Asahi

[1] As a result, on August 21, 2017, TKC received a report from JTCCM for a temporary suspension of TKC's right to display the JIS certification and had right actually temporarily suspended by JTCCM on the same day on the grounds of the Earlier Case of TKC. The temporary suspension was subsequently withdrawn as of October 16, 2017 after JTCCM re-inspected the plant on September 29, 2017.

performed the investigations described in (i) through (iii) below.

(i) A detailed review and examination of relevant materials;

(ii) A digital forensic investigation of email data, etc. possessed by relevant parties; and

(iii) Interviews of relevant parties.

The Investigation was led by Takashi Shibuya and nine others of Nishimura & Asahi, who have no interests in MMC, MAC, or TKC. Additionally, an expert forensic vendor was engaged to assist with the Investigation under the direction and supervision of Nishimura & Asahi.

2 Detailed Review of Relevant Materials

Nishimura & Asahi collected the materials that currently exist at MAC and TKC that could relate to the state of the frameworks for quality control at MAC and TKC and MAC's subsidiary management framework (policies and procedures relating to quality control, inspection records, and materials from quality-related committees, etc.) and performed a detailed review and verification of their content.

3 The Status of Conducting Digital Forensic Investigation, etc.

Nishimura & Asahi preserved, to the extent necessary and possible, email data of thirty four (34) executives and employees of MAC relevant to, or who may have been relevant to, quality control frameworks at MAC and TKC and MAC's subsidiary management framework, saved on MMC's emails servers.

Due to the time constraints on the Investigation, it was necessary to apply reasonable limits to the email data that was preserved, so Nishimura & Asahi extracted the email data using keyword searches. With respect to the data extracted using the above method, the forensic vendor mentioned in Section 1 above conducted the first-level data review, and Nishimura & Asahi conducted the second-level data review. This report is based on these materials.

4 Status of Conducting Interviews, etc.

In order to make clear the facts of the framework for quality control at MAC and TKC and MAC's subsidiary management framework, Nishimura & Asahi conducted interviews with a total of fifty one (51) executives and employees of MAC and twenty two (22) executives and employees of TKC up until the Reference Date stated in 5 below. We note that some interviewees were interviewed multiple times.

5 Reference Date for the Investigation

The Investigation began on January 10, 2018. The reference date for this report is March 26, 2018 ("**Reference Date**"), and the description below in this report summarizes the facts, results of verification, etc. that became known as of the Reference

Date.

Chapter 2 Presumptions in the Investigation

Section 1 Overview of the Fuji Plant

1 Details of Business at and Products Handled by the Fuji Plant

The Fuji Plant currently produces sheet and plate products,[2] foil products,[3] and extruded products.[4] The Fuji Plant began construction in 1963, and operation and production of extruded products, foil products, and sheet and plate products began in that order, between 1963 and 1964.

There are three factories at the Fuji Plant: the Sheet and Foil Plant which produces sheet and plate products and foil products,[5] the Extrusion Plant which produces extruded products, and the Remelting and Casting Plant which performs such operations as casting of alloys.

MAC currently utilizes a business unit structure with each product business field split into one business unit, and it is structured so that each business unit has a sales department and factory for each product. Therefore, the Sheet and Foil Plant is positioned under the management of the Sheet and Foil Division,[6] the Extrusion Plant is positioned under the management of the Extrusion Division,[7] and the Remelting and Casting Plant is positioned under the management of the Raw Material Division,[8] and each business unit is responsible for managing revenue. Additionally, the Manufacturing Engineering Division is responsible for administration and management of production technology, etc. for all products, and carries out management across all product business units in relation

---

2 The main sheet and plate products are beer and beverage can materials, automotive heat exchanger components, lithographic printing sheets, etc.

3 The main foil products are aluminum electrolytic capacitor foils, packaging materials, aluminum foils, etc.

4 The main extruded products are automotive heat exchanger components, machinery components, electronic equipment components, etc.

5 The Sheet and Foil Plant was formerly divided into a sheet and plate plant and foil plant, but they were integrated into a single sheet and foil plant as of July 1, 2013.

6 Comprising departments responsible for (i) formulation of business strategies and budgets for sheet and plate products and foil products, (ii) overall business management including business revenue management and improvement for sheet and plate products and foil products, and (iii) management and support of subsidiaries and affiliates under their responsibility.

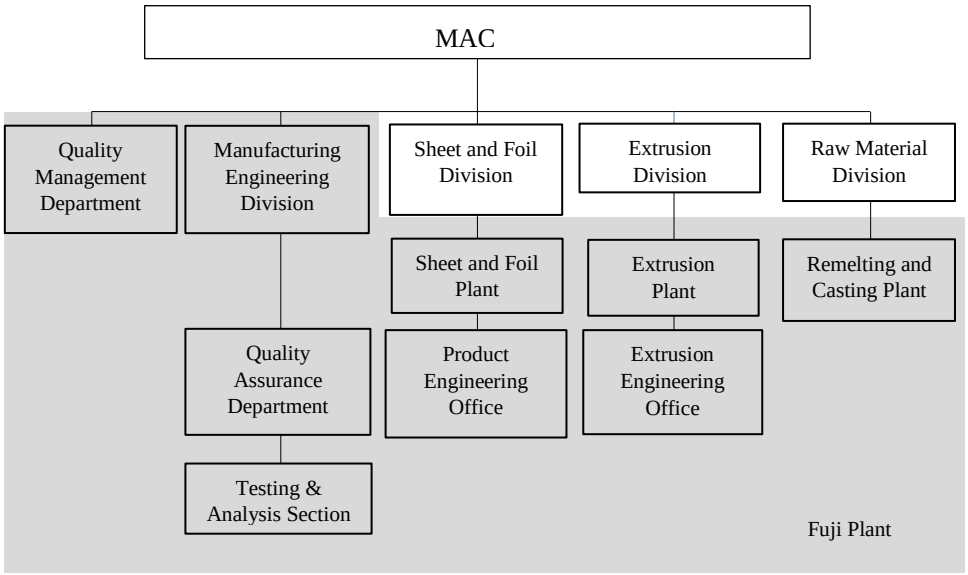
7 Comprising departments responsible for (i) formulation of business strategies and budgets for extruded products, (ii) overall business management including business revenue management and improvement for extruded products, and (iii) management and support of subsidiaries and affiliates under their responsibility.

8 Comprising departments responsible for (i) formulation of business strategies and budgets for the purchase of raw materials, (ii) overall operations including cost management and improvement, and (iii) administration and management of raw materials purchasing throughout the group.

to technical matters.[9]

The following is a summary of MAC's current organizational structure.

【Chart: organizational summary】



2 Main Departments and Allocation of Duties at the Fuji Plant

(1) Technical Section for Sheet and Foil Products, Sheet and Foil Plant, Sheet and Foil Division

The Technical Section for Sheet and Foil Products, Sheet and Foil Plant, Sheet and Foil Division (the "**Technical Section for Sheet and Foil Products**") is responsible for matters concerning quality control for sheet and plate products, and foil products, and is responsible for the study of process capacities and process design, etc. for both classes of products. In addition, with respect to certain products, the Technical Section for Sheet and and Foil Products also handles correspondence with customers.

The Technical Section for Sheet and Foil Products also contains the Can and Foil Materials Group, Heat Exchange Materials Group, PS[10] and General Materials Group, Design and Operations Improvement Group, the Inspection Group, and the Foil Product

---

9 Comprising departments responsible for (i) formulating and implementing cross-sectional improvement measures relating to production technology, etc., (ii) administration and management relating to production technology etc. and support for group companies.

10 Referring to lithographic printing sheets.

Group, corresponding to the relevant products or business.

(2) Technical Section for Extrusions, Extrusion Plant, Extrusion Division

The Technical Section for Extrusions, Extrusion Plant, Extrusion Division (the "**Technical Section for Extrusions**") is responsible for matters relating to extruded product production technology, quality control, and facility improvement.

The Technical Section for Extrusions also contains the Reception Group, Inspection Group, General Material group, Automobile Material Group, Heat Exchange Material Group, Production Technology Group, and the Processed Product Group, corresponding to the relevant products or business.

(3) Quality Assurance Department, Manufacturing Engineering Division

The Quality Assurance Department, Manufacturing Engineering Division ("**QA Department**") is responsible for matters relating to quality management system implementation, maintenance, and improvement (including internal ISO audits), quality assurance for sheet and plate products, extruded products, foil products, and heat exchange processed products, and matters concerning JIS, as well as product liability matters.

The QA Department contains the Testing & Analysis Section (the "**Testing & Analysis Section**"). The Testing & Analysis Section is independent from the duties of the QA Department, and is responsible for mechanical property testing such as inspection of products before shipping and requested testing.

(4) Quality Supervisory Department

The Quality Supervisory Department is responsible for planning and formulating quality audits and quality assurance framework improvement measures, etc., and matters relating to quality throughout the group.

The Quality Supervisory Department is an organization newly established as of July 1, 2017, directly under the President, as part of the recurrence prevention measures for the Earlier Case, as detailed in Section 1, Chapter 5 below.

3 Operational Flow from Receipt of Order to Shipment of Products

(1) Receipt of Order

At MAC, sales representatives from the Sales Department conduct sales negotiations with customers. When a sales representative receives an inquiry or request for quotation from a customer, they submit a proposal using a Request Review Form regarding the possibility of production and request the Technical Section for Sheet and Foil Products to review whether MAC can manufacture the product to the customer's specifications in the case of sheet, plate, and foil products, and request the Technical Section for Extrusions in the case of extruded products.

The personnel responsible in the Technical Section for Sheet and Foil Products or the Technical Section for Extrusions conduct the first stage review of whether manufacture is possible, based on internal standards set forth at the Fuji Plant, and request reviews of such possibility by each manufacturing section, and the Remelting and Casting Plant, etc., as necessary. After going through that procedure, they then obtain the approval of the managers of the QA Department, and the sales representative is provided with the results of the review regarding the possibility of manufacture.

If the Technical Section for Sheet and Foil Products or the Technical Section for Extrusions determines that production is possible, the sales representative proceeds with customer negotiations, and an agreement is reached with the customer on delivery specifications in a document (however, in the case of extruded products, there are also cases where there is no agreed specification document and there is just agreement on product design drawings (called "**Approved Drawings**")).

If the Technical Section for Sheet and Foil Products, the Technical Section for Extrusions or the QA Department determines that production is not possible, one of the following methods are applied:

① For the product for which mass production is difficult using the existing technologies, design and development is requested to the Products Research and Development Department by treating such product as development products.

② Regarding the possibility of manufacturing, if the manufacturing of a product is once determined to be "impossible" but is to be treated as "possible" through discussions among related parties[11] in light of a business strategy or business policy, approval is obtained from the QA department.

③ The product is not be commercialized.

(2) Flow from the Start of Manufacture to Shipment

Once a decision has been made to accept an order, the Sales Department submits a manufacturing request to the Technical Section for Sheet and Foil Products in the case of sheet, plate, or foil products or to the Technical Section for Extrusions in the case of extruded products. The Technical Section for Sheet and Foil Products or Technical Section for Extrusions prepares a quality plan setting out the results of their review of the manufacturing process design, etc., and it is referred to the Production Control Sections.[12] The relevant Production Control Section issues manufacturing instructions to the manufacturing section based on the quality plan, and the product is manufactured under

---

[11] The related parties include the responsible personnel from the Technical Section for Sheet and Foil Products or the Technical Section for Extrusions, as well as from the QA Department, Sales Department, Products Research and Development Department and Production Technical Department, and depending on the importance of the business, members of management, such as the General Managers of divisions, also participate in the discussions.

[12] The department responsible for managing the manufacturing process. There are separate Production Control Sections in charge for each product, as follows.

Sheet and plate products: Production Control Section for Sheet, Sheet and Foil Plant, Sheet and Foil Division.

Foil products: Production Control Section for Foil, Sheet and Foil Plant.

Extruded products: Production Control Section for Extrusions, Extrusion Plant, Extrusion Division.

the management of the Production Control Section.

The manufacturing process for sheet and plate products, and foil products all begin with melting and casting of the raw material. The material then undergoes rough hot rolling, finishing hot rolling, and then cold rolling. For sheet and plate, following cold rolling, materials are corrected to meet customer specifications, cut, and then annealed. For foil products, following cold rolling, materials undergo intermediary annealing, are rolled into foil, cut, and then undergo final annealing.

The manufacturing process for extruded products begins with the melting and casting of the raw material, which is then used to manufacture a billet (an ingot adjusted for extrusion). This is then cut, heated, undergoes extrusion molding, and heat treatment.

Each manufacturing process has its own inspection standards, separate from the product inspection for finished products, and the responsible personnel in the manufacturing section conduct inspections to confirm that the product under production meets the required standards ("**In-Process Inspection**"). Products that do not satisfy the required standards in In-Process Inspection cannot proceed to post-processing, and are processed in accordance with the operation flow for Non-Conforming Products described below in 5.

After the manufacturing process has been completed, products undergo the product inspections described below in 4, and are then packaged or packed, and shipped, in accordance with instructions from the Sales Department.

4 Product Inspection Flow

(1) Overview of Product Inspection

Sheet and plate products, foil products, and extruded products all undergo the following product inspections, divided into two general types: (i) visual inspection of the appearance of the surface, etc. of products and inspections of dimensions and shape (these two inspections are hereinafter referred to collectively as "**Appearance and Dimension Inspection**"), and (ii) testing of the products mechanical qualities ("**Mechanical Testing**"). What inspection and inspection items are performed in product inspection for each product varies depending on the standards agreed with the customer.

Appearance and Dimension Inspection is conducted by the Inspection Group of the Technical Section for Sheet and Foil Products for sheet and plate products, by the Foil Inspection Team, Foil Product Group, Technical Section for Sheet and Foil Products for foil products, and by the personnel responsible for inspection in the Inspection Group of the Technical Section for Extrusions in the case of extruded products. In addition to these, Mechanical Testing is mainly conducted by the personnel in the Testing & Analysis Section.

(2) Product Inspection Flow

A. Appearance and Dimension Inspection

In Appearance and Dimension Inspections, the inspector is provided with a sample for Appearance and Dimension Inspections, and the sample is used to conduct the inspections set forth in the "Product Standards" or "Work Instruction Document," etc. In the case of sheet and plate products, the results are logged in the system, but for extruded products and foil products, the inspection results are entered in the prescribed section of the "Work Instruction Document" by hand. The results of inspections are reported to the personnel responsible for mill test certification issuance described below in C.

B. Mechanical Testing

The Testing & Analysis Section's inspector receives a Mechanical Testing sample from the Technical Section for Sheet and Foil Products or Technical Section for Extrusions, prepares the necessary test specimens, and performs Mechanical Testing using measuring equipment such as tensile testers.

The flow for recording Mechanical Testing results varies slightly for each type of products.

For sheet and plate products, the Testing & Analysis Section logs into the test results entry screen linked to the Technical Section for Sheet and Foil Products' system, and reports the test results to the Technical Section for Sheet and Foil Products by recording them directly into the system. At the same time, however, a hard copy of "Mechanical Testing results report" is also prepared and sent to the Technical Section for Sheet and Foil Products (depending on the tensile testing equipment, in some cases the test results are automatically printed in a "Mechanical Testing results report").

For foil products, the Technical Section for Sheet and Foil Products provides the Testing & Analysis Section with both a sample and a form for the "Mechanical Testing results report". The Testing & Analysis Section's inspector enters the test results into the Mechanical Testing results report by hand, and the results are reported to the Technical Section for Sheet and Foil Products by circulating the Mechanical Testing results report to them.

For extruded products, like for foil products, the test results are handwritten into the "Mechanical Testing results report" form and reported to the Technical Section for Extrusions. In the case of extruded products, there is also a computerized system for entering the test results, and test results are both circulated to the Technical Section for Extrusions using a paper "Mechanical Testing results report" and entered into this system.

C. Issuance of Mill Test Certification

The personnel responsible for issuance of mill test certifications – who also serve in the QA Department and Technical Section for Sheet and Foil Products (or Technical Section for Extrusions) – issue the following mill test certifications for sheet and plate

products, foil products, and extruded products, respectively.

(a) Sheet and Plate Products

The personnel responsible for issuance of mill test certification for sheet and plate products enters the product manufacturing number relating to the shipping directions in the system based on shipping directions issued by the personnel responsible in the Sales Department to the personnel responsible in the Manufacturing Process Section. This allows the mill test certification system to automatically extract information, albeit partially, such as the test results, necessary to prepare the mill test certification. The personnel responsible for mill test certification confirm whether there are special items[13] that need to be included in the mill test certification as agreed with the customer for such product, and if any such special items need to be included, they revise the testing items and values in the mill test certification system, check whether the system has omitted anything, and then issue the mill test certification.

(b) Foil Products and Extruded Products

The personnel in charge of issuance of mill test certification for foil products and extruded products confirms the Appearance and Dimension Inspection results and Mechanical Testing results report for the product for which a shipping direction has been issued, based on shipping directions from the personnel responsible in the Sales Department to the personnel responsible in the Manufacturing Process Section, enter the necessary items in the mill test certification system, and issue the mill test certification.

5 Regular Operational Flow When Non-Conforming Products are Produced

If failure to conform to standards is confirmed in inspection items for In-Process Inspection or product inspection, the employee responsible for such manufacturing process or the inspector enter the details of the inspection results, in a "Non-Conformance Report" in the case of sheet and plate products or foil products, and in a "Withheld Product and Processing Report" in the case of extruded products. Products subject to a "Non-Conformance Report" or "Withheld Product and Processing Report" are marked as Non-Conforming Products, and withheld from proceeding to the next process.

"Non-Conformance Reports" and "Withheld Product and Processing Reports" are provided to quality committee meetings ("**Quality Committee**")[14] held at a set time each day, and the Quality Committee determines how these products will be handled.

Non-Conforming Products can undergo re-inspection, be put to use as products for other customers, transferred to shipping procedures with the approval of the customer

---

[13] For example, there are cases where the customer requests values for tensile testing be reported using the customer's unique calculation method or that special inspection items designated by the customer be reported. In such cases, the reported values are not automatically extracted by the mill test certification issuance system, so the personnel in charge has to enter them by hand.

[14] There are separate Quality Committees that meet for each product (sheet and plate products, foil products, and extruded products). Quality Committees are made up of personnel from the Product Engineering Office, Extrusion Engineering Office, manufacturing departments, and inspection departments.

("**Customer Concessions**"), or repaired so as to become conforming products, etc., and the handling is determined based on the specifics of the non-conformity.

Section 2 Overview of TKC

1 Overview of Company and Organization

TKC's predecessor, Kinoshita Tekkojo began operations in 1926, and Tachibana Metal Mfg Co., Ltd. was established in 1949. TKC became a subsidiary of MAC in 2000, and in 2004 it merged with Ryowa Kinzoku Kogyo Kabushiki Kaisha.

TKC's business comprises the manufacture of light alloy extruded, drawn products, and processed products, all of which are manufactured at the Yoro Plant.[15]

2 Main Departments and Allocation of Duties at the Yoro Plant

The Manufacturing Department is in charge of product manufacturing and product development, etc. The Manufacturing Department contains the Production Management Section that carries out production plan formulation and manufacturing process management, etc. and the Extrusion Manufacturing Section and Drawn Pipe Manufacturing Section[16] that are directly in charge of product manufacture.

The Quality Engineering Department is in charge of product inspection and matters relating to quality control, etc. The Quality Engineering Department also contains the Die Engineering Section responsible for die design and the Quality Engineering Section that carries out product inspection.

3 Operational Flow from Receipt of Orders to Shipment

The flow from the receipt of orders through the shipment of products at TKC is as follows.

The Sales Department first receives an inquiry from a customer and contacts the Die Engineering Section, which reviews the feasibility of development and mass production of the product. If the review finds that there is a prospect of feasibility for development and mass production, the Die Engineering Section prepares drawings describing the specifications, and contacts the Sales Department. The Sales Department then proceeds with negotiations with the customer, and if agreement is reached, a formal order is placed.

Once the order is received, the Die Engineering Section designs and orders the dies, and when the dies are delivered, the Extrusion Manufacturing Section or the Drawn Pipe Manufacturing Section begins manufacturing the product. Once this has been done,

---

15 The Yoro Plant was constructed in 1969.

16 The Extrusion Manufacturing Section manufactures extruded products and the Drawn Pipe Manufacturing Section manufactures drawn products.

the product inspections described below in 4 are carried out, the Production Management Section packs the product, and the product is shipped.[17]

4 Product Inspection

(1) Overview of Product Inspection and Personnel Framework

Like at MAC, product Inspection is divided into two general categories: (i) Appearance and Dimension Inspection and (ii) Mechanical Testing.

All product inspections are the responsibility of the Quality Engineering Section's inspectors.[18] The inspectors conduct Appearance and Dimension Inspections at the press plant where manufacturing takes place, and perform Mechanical Testing in the testing office, which is equipped with specialized measuring equipment, etc.

(2) Product Inspection Flow

A. Appearance and Dimension Inspection

The personnel in charge of manufacturing take samples from the products once manufacturing has been completed, and circulate the sample and a "Work Instruction Sheet"[19] to the inspector responsible for Appearance and Dimension Inspection. The inspector responsible for Appearance and Dimension Inspection performs Appearance and Dimension Inspection in accordance with the Work Instruction Sheet, and handwrites the inspection results on an "Inspection Card". Once a product passes this Appearance and Dimension Inspection, the sample and "Inspection Card" are forwarded to the testing office.

At TKC, it is possible to enter an inspection passing report in the system once a product passes Appearance and Dimension Inspection, even if it has not completed Mechanical Testing. Therefore, until January 2018 when MMC's special audit discovered the Misconduct (TKC), TKC was proceeding with packing and shipping procedures as soon as Appearance and Dimension Inspection was completed, without waiting for the results of Mechanical Testing.

---

17 However, as described in 4(2)A below, it is possible to enter an inspection passing report in the system even if just the Appearance and Dimension Inspection was performed, so in some cases products were packed and shipped without the Mechanical Testing being performed.

18 At the time that this Investigation was conducted, the number of inspectors totaled six, consisting of three inspectors responsible for Appearance and Dimension Inspection and another three inspectors responsible for Mechanical Testing. Team leaders and personnel from other departments assisted with product inspection, as necessary.

19 A work instruction sheet listing the inspection items and standards, etc. for Appearance and Dimension Inspection.

B. Mechanical Testing

The inspector in charge of Mechanical Testing uses the samples, etc. forwarded by the Appearance and Dimension Inspection inspector to perform Mechanical Testing such as hardness testing and tensile testing. At TKC there are separate inspectors responsible for hardness testing and tensile testing.

The Mechanical Testing inspectors handwrite the results of Mechanical Testing in a "Daily Material Quality Non-Conformance Report".[20]

C. Issuance of Mill Test Certification

Other than packing and shipping procedures, once product inspections were completed, the employee in the Quality Engineering Section responsible for entering the mill test certification would enter the figures from test results listed in the "Daily Material Quality Non-Conformance Report" in the mill test certification issuance system and issue a mill test certificate.[21]

Mill test certification were sent to the employees in charge of shipping (or the Sales Department) after the Senior Engineer of the Quality Engineering Section confirmed the contents.

(3) Regulator Operational Flow When Non-Conforming Products are Produced

If it is determined that a product does not conform to the standards as a result of product inspection, the inspector issues a "Withheld Product Report". If a "Withheld Product Report" is issued, the withholding of a product[22] is reported at the daily quality assessment committee meeting, and the quality assessment committee decides what should be done with the withheld product. Specifically, if the results of review by the quality assessment committee differ from the judgment of the initial inspector and they determine that the product satisfies the standards, it is sent on to the next process. On the other hand, if the committee determines that the product does not satisfy the standards, after being ruled to be non-conforming, it either undergoes re-inspection or is subject to product screening and repair, etc. In addition, in cases where it is determined that there is no problem in terms of the use of the product or when the delivery deadline cannot be met if it is not passed, a "Request Form for Customer Concession" is issued, it is referred to the sales representative, and can be shipped despite being determined not to pass, if the customer's approval can be obtained.

The quality assessment committee is attended by the Quality Engineering Section Leader, inspectors, and staff from the Extrusion Manufacturing Section or the Drawn Pipe

---

20 This is prepared each day, and is a daily report collating in a list the test results from Mechanical Testing of products performed that day.

21 However, mill test certification was not issued unless the customer requested one.

22 Meaning the product described in a withheld product report that is subject to a decision of the quality assessment committee on what to do with it.

Manufacturing Section,[23] and the Quality Engineering Section Leader makes the final decision.

Most withheld products reported to the quality assessment committee were products withheld in relation to Appearance and Dimension Inspection.

Chapter 3 Series of Facts Relating to the Misconduct

The timing of the discovery of the main misconduct and the related circumstances arranged in chronological order in connection with this Investigation, including the Earlier Case, are as described in the exhibit.

The following discusses the details.

Section 1 Earlier Case and MAC's Handling Thereof

1 Rewriting Test Data Pursuant to "Concession Measure Implementation Rules"

(1) Description

As described in Chapter 2, Section 1, 5 above, if the results of product inspection deviated from the standards agreed with customers, a "Non-Conformance Report" should have been issued and the product made into a conforming product by the addition of further processing, etc. or if it could not be made to meet the standards, then a customer concession should have been obtained or the product should have been scrapped.

At MAC, however, there were unofficial internal rules, called "Concession Measure Implementation Rules", that existed as an exception to the foregoing, and sheet and plate products for some customers were processed in accordance with these internal rules. Specifically, under the "Concession Measure Implementation Rules", the test data for certain sheet and plate products were rewritten as within the tolerances set by the standards even if they did not meet the standards for some test items to a certain defined degree.[24] The rules provided that this was permitted as a specially approved procedure, and the rewriting of test data pursuant to these rules was, in fact, carried out.

When rewriting test data pursuant to the "Concession Measure Implementation Rules", first the personnel responsible in the Technical Section for Sheet and Foil Products would confirm whether the Non-Conforming Product was subject to the "Concession Measure Implementation Rules", and if it was, then, in accordance with the "Concession Measure Implementation Rules", issue a "Inspection Results Report

---

[23] In the past, handling was determined at the sole discretion of the Quality Engineering Department, but subsequently, manufacturing departments also began to participate because it was regarded as preferable to have the opinion of manufacturing departments as well when determining what to do.

[24] The "Concession Measure Implementation Rules" set forth the scope that could be specially approved, etc. for each type of product and customer.

Revision Request" that sets out what the rewritten figures should be. Following that, the "Inspection Results Report Revision Request" would be approved by the Manager of the Sheet and Plate Product Engineering Section, be sent to the mill test certification issuance personnel, who would enter into the system the test data set out in the "Inspection Results Report Revision Request" and issue a mill test certificate. The issued mill test certificate would then be approved by management level personnel[25] in the QA Department.

(2) Circumstances, etc. Leading to Creation of the "Concession Measure Implementation Rules"

The "Concession Measure Implementation Rules" were created in November 2002.

Prior to that, the personnel responsible in the then Production Quality Control Section for Sheet and Plate, Sheet and Plate Production Department rewrote data at their own discretion when a Non-Conforming Product was produced if they determined that it would not cause any problems when used by the customer, taking into account past track record, etc.[26] At the time, in 2002, thinking that the impact would be large even though the QA Department had requested for the shipment of Non-Conforming Products to be stopped, relevant parties, mainly from the Production Quality Control Section for Sheet and Plate, Sheet and Plate Production Department, thought that it needed to be stopped, because the practice was harmful due to the inconsistency in the decisions of the personnel in charge arising from the fact that the criteria for such practices were unclear, etc. By putting in place the "Concession Measure Implementation Rules" they sought to limit the scope of test data rewriting and prevent other test data from being rewritten.

However, the relevant parties at that time, mainly from the Production Quality Control Section for Sheet and Plate, Sheet and Plate Production Department, were of the awareness that rewriting test data without the approval of customers was wrong, even when performed according to "Concession Measure Implementation Rules", and in parallel with the operation of the "Concession Measure Implementation Rules" they improved production capabilities such as by working to revise the production process, lowered the percentage of Non-Conforming Products produced, and gradually reduced the number of customers covered by the "Concession Measure Implementation Rules".[27] Consequently, as of November 2016 the number of customers subject to the "Concession Measure Implementation Rules" was reduced to just two, compared to dozens when the rules were first put in place.

---

25 The Deputy General Manager for Sheet and Plate Products in the QA Department.

26 Prior to the creation of the "Concession Measure Implementation Rules", there was little awareness of the necessity of verifying production capability in advance before receiving an order and MAC would use the standards for other company's materials in their own delivery specifications, as is, at the request of customers, etc., which resulted in some cases where standards were discovered not be have been met after delivery had started.

27 The terms of the "Concession Measure Implementation Rules" were repeatedly revised in connection with the reduction of the target customers.

2 MAC's Response, etc. to Discovery of the Earlier Case

(1) Status of Earlier Case Investigation

At the direction of its President, MAC conducted an internal investigation to get an understanding of the overall nature and root causes of the Earlier Case ("**Earlier Case Investigation**").

The Earlier Case Investigation first conducted a detailed review of "Inspection Results Report Revision Requests" for sheet and plate products for the past three years[28] and investigated whether data had been rewritten pursuant to the "Concession Measure Implementation Rules" for any companies other than the two companies mentioned above. This review discovered that data were rewritten pursuant to the "Concession Measure Implementation Rules" for an additional 14 companies.

In addition, facts relating to the rewriting of data pursuant to the "Concession Measure Implementation Rules" were gathered and organized. This work was predominantly performed by parties who served as the General Manager, Internal Audit Department,[29] and General Manager, QA Department at the time. Specifically, the General Manager, Internal Audit Department, and General Manager, QA Department at the time, and others, collated facts based on their recollections from the time in question, and interviewed persons with knowledge of the situation at the time as necessary.

(2) Investigation of Other Products and Subsidiaries

As part of the Earlier Case Investigation, from November 2016, immediately following the detection of the Earlier Case to January 2017, MAC's General Manager, Internal Audit Department confirmed with the former managers and the employees in the managerial positions for quality assurance for foil products and extruded products, respectively, whether test data were rewritten, but nobody reported that there was (had been) misconduct, and it was concluded that there had been no misconduct for products other than sheet and plate products.

MAC also confirmed whether similar circumstances existed at two of its subsidiaries, TKC and MA Packaging Co., Ltd. Of these, with respect to TKC, MAC's General Manager, Internal Audit Department, and others, visited TKC on February 20, 2017 and reviewed Withheld Product Reports, which described the details of the handling of Non-Conforming Products. This review discovered references to "internal concessions," which led to them learning about the Earlier Case (TKC) (the details of the circumstances are as described in Section 2 3(1)A.).

---

[28] Under MAC's internal rules, documents must be retained for three years.

[29] The General Manager, Business Auditing Department also previously served as the General Manager, QA Department, so had an understanding of the circumstances described above.

(3) Response Furtherance Committee's Customer-Facing and Consideration of Recurrence Prevention Measures

In February 2017, MAC established the Response Furtherance Committee with the goal of discussing how to handle the issue with the customers that were found to have been shipped Non-Conforming Products in the Earlier Case and to formulate recurrence prevention measures. The committee members comprised the President as the head of the committee, and relevant parties from the General Administration Department (secretariat), Corporate Planning and Affiliate Department, Internal Audit Department, Accounting and Finance Department, Products Research and Development Department, Manufacturing Engineering Division, and Sheet and Foil Division.

The Response Furtherance Committee included a Customer-Facing Team and Recurrence Prevention Team, which respectively dealing with customers, collating facts confirmed through investigation and studied recurrence prevention measures. The Earlier Case (TKC) was also reported to the Response Furtherance Committee, and the committee also discussed how to respond to that case.

(4) Implementation of Recurrence Prevention Measures, etc.

Chapter 1, Section 1 below provides an overview of the recurrence prevention measures in response to the Earlier Case.

In addition to revision of its organizational structure, MAC took the following measures.

A. President's Messages

Messages from the President were issued to employees of General Manager rank and higher, and other ordinary employees, respectively, with the aim of raising employee awareness of quality matters.

From the perspective of information control, however, the message merely said "There was continuous shipping of non-conforming products for some of the Company's products despite the fact that they did not satisfy standards," etc., and did not inform employees about the details of the Earlier Case.

B. Compliance Education Implementation

MAC already conducted periodic compliance education for employees, but it carried out additional compliance education relating to quality problems around the summer of 2017, in response to the Earlier Case, with the aim of further improving compliance awareness. Specifically, lecturers were invited from MMC, etc. and training was conducted using measures that had not been used before, such as group discussions.

However, like in A. above, it did not touch on the specifics of the Earlier Case.

Section 2 Details of, and Background to, the Misconduct Discovered in the Investigation

1 Overview of the Misconduct

The description, starting date, and root causes, etc. of the Misconduct are as described in the table below.

[Table: Overview of the Misconduct]

The Misconduct	Product Group	Details of Conduct	Starting Date and Causes
Rewriting of test data by the Quality Committee	Extruded products	If the elongation value diverged from standards in tensile testing, the Quality Committee that received a report of the Non-Conforming Product would decide to ship the product if the elongation value for one of the two samples, or the average value for the two samples, were within the tolerances set by the standards. The Technical Section for Extrusions would rewrite the elongation value in accordance with that decision. The Quality Committee also decided to ship products in some cases even if the tensile strength or yield strength deviated from the standards. Moreover, there were also rare cases where test data was rewritten even if the	Around 2006, at the latest. Because the elongation value test results were not stable in the first place, and there were many cases that irregular values were obtained in, if one of the sample's test results was within the tolerances set by the standards, it was determined that there were no issues with the product's performance if the tensile strength or the yield strength satisfied the standards in the same tensile testing.

The Misconduct	Product Group	Details of Conduct	Starting Date and Causes
		elongation value of the two samples deviated from the specifications.	
Rewriting of test data by inspector	Sheet and plate products	The personnel responsible in the Technical Section for Sheet and Foil Products would rewrite the yield strength value in the "Mechanical Testing Results Report" at their own discretion if the yield strength did not meet the standards in tensile testing. There were also cases where, even when it satisfied the standards, the test data were rewritten to make it look better if the yield strength value was the equal to the tensile strength.	Carried out from 2007. It is believed that data were rewritten because the personnel responsible determined that rewriting was the only way to meet the delivery deadline.
	Foil products	The personnel in charge of issuance of mill test certification would rewrite test data if the elongation value deviated from the standards.	Second half of 1990, at the latest. In general, foil products frequently have fairly broad standards, but some products had relatively strict standards set, and it may not have been possible to satisfy the standards.

The Misconduct	Product Group	Details of Conduct	Starting Date and Causes
		Although the internal standards required samples to be taken from two places and measured, if the yield strength value could not be obtained because one of the sample specimens fractured in the middle of the tensile test, the personnel responsible in the Technical Section for Sheet and Foil Products would enter a value that differed from the actual measurements.	Carried out around 2000, at the latest. It was determined that there were no issues with the product's performance because the tensile strength was within the standards in the tensile testing for the same sample.

The Misconduct	Product Group	Details of Conduct	Starting Date and Causes
		The mill test certification issuance personnel would rewrite maximum values in the Appearance and Dimension Inspection if the thickness exceeded the maximum value in the standards.	It is unknown when this started, but it was carried out for quite a long time. This followed practices carried out from a long time ago, and although the circumstances leading to rewriting is unknown, it was difficult to achieve results within the tolerances set by the standards, but because the focus for foil products is usually on the barrier properties of the product, when a customer requested the foil product to be thinner for cost reasons, MAC did not regard deviation from the maximum thickness value set by the standards as causing any problems for the customer because it did not increase the cost for the customer and was not detrimental to the barrier properties of the product.[30]

[30] The customer had given verbal approval for rewriting the data to be within the standards when the thickness exceeded maximum under the standards, but there was no formal written document giving approval.

The Misconduct	Product Group	Details of Conduct	Starting Date and Causes
		For loading, samples were meant to be taken from two places and it would be acceptable if either of them satisfied the standards, but the personnel responsible for the Technical Section for Sheet and Foil Products would rewrite the data to be within the standards if both samples did not meet the requirements. However, there was an error in the standards managed in-house resulting in them being stricter than the customer's standards, so ultimately the product satisfied the customer's standards.	It is unknown when this started, but it was carried out for quite a long time. It is believed that the personnel responsible rewrote data because they determined that rewriting the data was the only way to meet the delivery deadline. Incidentally, an error in the internal management standards is thought to have been entered by mistake when entering the delivery specifications into the product inspection process.
	Extruded products	When converting tensile testing values (tensile strength, yield strength, elongation) from hardness, if the converted elongation value did not satisfy the standards, the mill test certification issuance personnel rewrote the converted results so that they satisfied the standards.	Carried out from around 2005, at the latest. This followed practices carried out from a long time ago, and the circumstances leading to rewriting is unknown.

The Misconduct	Product Group	Details of Conduct	Starting Date and Causes
		For products where manufacturing was outsourced to TKC, the standards required that two samples be taken and two inspections conducted, but in cases where manufacturing was outsourced to TKC pursuant to terms requiring only one sample and one inspection, the mill test certification issuance personnel would enter the results of that one inspection as the results of two inspections.	Same as above
		Even when the standards were satisfied by the results of Brinell hardness measurements, the mill test certification issuance personnel, who had received directions in advance from the responsible employee from the Technical Section for Extrusions, would rewrite the Brinell hardness values so that they all were within a certain range.	Carried out from around 2005. The customer requested a stricter range of test results than the standards, and they attempted to comply with the customer's request without studying whether it was necessary for the product's use.

The Misconduct	Product Group	Details of Conduct	Starting Date and Causes
Uniform rewriting of test data	Sheet and plate products	The Technical Section for Sheet and Foil Products, that was responsible for Appearance and Dimension Inspections, would uniformly change the actual measurement results by multiplying them by 1.4, with respect to surface roughness for products for some customers.	New measurement equipment was introduced in 2000, and because the measurements differed from the old equipment even with the same test conditions (due to a systematic error), a multiple was calculated and uniformly applied to correct for this difference.
Inspections not performed	Foil products	Although surface contamination inspection was required by the standards, this inspection was not carried out (and it was not entered in the inspection results either).	It is unknown when this started, but inspections were not carried out for quite a long time. There was an administrative error when transferring the delivery specifications to the work process.
	Extruded product	Although tensile testing was not carried out, the tensile strength was calculated from the hardness.	Carried out around 2005 at the latest. It is thought that there is a certain correlation between hardness and tensile strength, so they thought that there would not be a significant difference between tensile strength calculated from actual tensile testing and that calculated using the hardness.

The Misconduct	Product Group	Details of Conduct	Starting Date and Causes
Defective inspection due to insufficient understanding of the JIS requirements, etc.	Sheet and plate products Foil products Extruded products	Tensile testing conducted with greater speed than the JIS requirements.	It is unknown when this started, but some people stated that it had been going on for 26 or 27 years. This is due to insufficient understanding of the JIS requirements (and in an attempt to improve the efficiency of testing work).
	Sheet and plate products Extruded products	Products that did not pass inspection must be re-inspected using double the number of samples of the initial inspection, but re-inspection was conducted using the same number of samples as the initial inspection.	It is unknown when this started, but it was carried out for quite a long time. This is due to insufficient understanding of the JIS requirements.
	Sheet and plate products	With respect to cladding material thickness, the number of samples and measurement multiples differed from JIS requirements.	It is unknown when this started, but it was carried out for quite a long time. This is due to insufficient understanding of the JIS requirements.
	Extruded products	Although standards require hardness measurements to be conducted using a Vickers hardness number ("**Hv**"), the simpler Webster hardness number ("**Hw**") was used.	It is unknown when this started, but it was carried out for quite a long time. This is due to insufficient understanding of the JIS requirements.

The Misconduct	Product Group	Details of Conduct	Starting Date and Causes
Defective inspection due to other reasons	Sheet and plate products	Although the specifications did not set a number of samples, for products where internal standards required two samples to be extracted and inspected, products were passed even if one sample did not satisfy the standards, if the average value of the two tests was within the standards, and the average value was entered as the test results.	When finishing hot rolling equipment was first introduced in 2009, the front and rear extremities of products had inconsistent mechanical properties, and this practice was carried out to avoid frequent Non-Conforming Products.

2 Background to the Misconduct

With the exception of insufficient understanding of JIS requirements, etc., the background to the all of misconduct described above in 1 carried out for sheet and plate products, foil products, and extruded products differed, as described below.

Furthermore, among the defective inspection due to an insufficient understanding of JIS requirements, etc., in the case of the violation of the standard for pulling speed in tensile testing, most people in the Testing & Analysis Section who conducted tensile testing stated that they did not know the correct speed set required by JIS and admitted to having an insufficient understanding of JIS requirements, but there was also a statement that conducting the tensile testing at the speed set forth by the JIS at times took up a lot of time because a lot of tensile testing samples were brought in every day, so they conducted the tensile testing at higher speeds in order to improve testing efficiency, despite knowing its violation of the JIS requirements.

(1) Sheet and Plate Product Misconduct

Sheet and plate products that had their yield strength values rewritten were not subject to the "Concession Measure Implementation Rules". The "Concession Measure Implementation Rules" were put in place in November 2002, following which employees were prohibited from adding any further products to be covered by the rules. However, the orders for the aforementioned products that had their test data rewritten were received by MAC from 2007 onwards, and therefore are believed to have had their results rewritten outside the framework of the "Concession Measure Implementation Rules".

As described in Section 1 1(1) above, the "Concession Measure Implementation

Rules" were put in place in 2002 to stop the rewriting of test data by each individual personnel responsible, but the initial intent with which they were first implemented may have been relaxed with the passage of time. However, this Investigation only discovered a few cases of rewriting, and we believe that rewriting only took place in extremely rare cases where the figures did not fall within the required standards.

On the other hand, the uniform rewriting of actual measurements by a multiple of 1.4 with respect to surface roughness of sheet and plate products for some customers was a measure carried out to correct a systematic error, and according to the inspector from the Production Quality Control Section for Sheet and Plate, Sheet and Plate Production Department at the time when the measure was started, it is possible that they determined that rewriting would not cause any problems, because they verified the new and old measurement equipment and confirmed that they would both have the same level. This measure had already commenced around 2000, but the awareness of the Production Quality Control Section for Sheet and Plate, Sheet and Plate Production Department was that the measure was to correct a systematic error rather than actually substantially altering the inspection results, so it was never submitted as a practice subject to the Concession Measure Implementation Rules, which is believed to be the reason why it was not discovered in the investigation in the Earlier Case.

In addition, in the case where internal standards required two samples to be extracted and inspected, but MAC would allow the product to pass if the average for the two samples was within the standards, even if one sample did not pass, and the average value was entered as the inspection result, after MAC introduced finishing hot rolling equipment, when the inspection of two samples including those taken from the front and end extremities, under internal standards the product was only passed when both samples were within the standards, but the mill test certification stated that the average of the two samples must be entered. Therefore, although re-inspection would have to be conducted if one of the samples did not satisfy the standards, the value entered in the mill test certification would still be within the permitted tolerances, which meant that if another test had to be conducted it would create a lot of work for the personnel responsible, and we believe that the desire to avoid that was what lead to this situation.

(2) Foil Product Misconduct

The time when rewriting of elongation results for foil products was started varied depending on the inspection item, but it came to be carried out by the second half of 1990 at the latest.

Although not 100% certain, the reason for rewriting may have been due to the fact that, in general, foil products frequently have fairly broad standards and it was normally rare to be outside the acceptable tolerances, but some products had relatively strict standards set, and it may not have been possible to satisfy the standards. Although in some cases the mill test certification issuance personnel performed the rewriting, when that employee took over the role from their predecessor they were not informed of the reason and it was not necessary for the employee to rewrite the results at their own judgment, so it believed to have been carried out at the discretion of the personnel responsible in the Technical Section for Sheet and Foil Products at the time.

It seems that the rewriting of yield strength results, however, was carried out because the personnel responsible in the Technical Section for Sheet and Foil Products determined that there were no issues with product performance because the tensile strength result was within tolerances set forth in the standards when calculated in the same tensile testing.

Similarly, in the case of rewriting of thickness results, the focus for foil products is usually on barrier properties, and the products subject to rewriting had standards for thinner foil only to reduce costs, so it appears that the inspector from the Technical Section for Sheet and Foil Products determined that there would be no particular problems if the products were thicker than the maximum set by the standards.

The rewriting described above was not carried out pursuant to set rules like in the Earlier Case and was conducted in response to individual circumstances, and partly because of that it is believed it was not discovered in the investigation of the Earlier Case.

(3) Extruded Product Misconduct

A. Rewriting of Test Data by Quality Committee

As described in 5 above in Chapter 2, Section 1, when a product was confirmed to not satisfy the standards at MAC, a "Withheld Product and Processing Report" was submitted to a Quality Committee, and the Quality Committee would decide how to handle the product, but as described in 1 above, the Quality Committee decided to rewrite the test data when the elongation value was outside the acceptable tolerances, and ship the product.

Tensile testing – one of the forms of Mechanical Testing – is conducted to measure tensile strength, yield strength, and elongation. Tensile strength and yield strength are measured automatically, and the results are fairly consistent, but elongation is calculated based on the actual elongation length in each test, so there was an awareness that test results would vary quite a lot depending on where the specimen prepared using a sample fractured, etc. Therefore, it appears that the Quality Committee determined that there was no problem with product performance if the results of tensile testing for the two samples were both within the tolerances of the standards for tensile strength and yield strength, even if the elongation value for one sample exceeded the tolerances set by the standards. The decision of the Quality Committee was entered in the "Withheld Product and Processing Reports", the personnel in charge of the product in question from the Technical Section for Extrusions, etc. would rewrite the "Mechanical Testing results report" based on the decision of the Quality Committee entered in the "Withheld Product and Processing Reports", and circulate it to the mill test certification issuance personnel.

The rewriting of elongation results in this way by the Quality Committee was carried out around 2006 at the latest, and it appears that it was decided by Section Managers from the Technical Section for Extrusions, etc. who attended the Quality Committee meetings. Subsequently, the rewriting of test data by Quality Committee was not necessarily limited to just elongation results, and rewriting of tensile strength and yield strength results was confirmed in 2015 as well. However, most of the employees

attending Quality Committee meetings stated that rewriting was restricted to elongation results, and only a few cases of rewriting tensile strength and yield strength results were actually confirmed, so we believe that this rewriting was very limited.

Such rewriting of test data by the Quality Committee ended around June 2017. The end of this practice was brought about because they realized it was just a matter of time until the rewriting was discovered due to the inspection of the "Withheld Product and Processing Reports" by the audit conducted by MAC around that time, so the General Manager of the Technical Section for Extrusions instructed the members of the Quality Committee not to rewrite test data in future.

B. Rewriting of Test Data at the Personnel Level for Issuance of Mill Test Certification

In the case of extruded products, test data was rewritten at the personnel level for issuance of mill test certification as described in 1 above, in addition to the rewriting of data by Quality Committee.

Among these cases, the rewriting of Brinell hardness results was carried out under the direction of the personnel in charge at the Technical Section for Extrusions at the time. In other cases of rewriting, although the rewriting was performed by the personnel in charge of issuance of mill test certification, when that employee took over the role from their predecessor they were not informed of the reason and it was not necessary for the employee to rewrite the results at their own judgment, so it believed to have been carried out at the discretion of the personnel in charge, etc. from the Technical Section for Extrusions at the time.

The Section Manager in charge of testing at the Technical Section for Extrusions became aware of Brinell hardness data rewriting around July 2017, when it was reported by an employee in charge of issuance of mill test certification. Subsequently, the products subject to the practice of rewriting were gradually reduced, and the practice was ultimately stopped around October 2017.

C. Failure to Perform Tensile Testing

In the case of extruded products, the tensile testing results (tensile strength, yield strength, and elongation) were calculated from the hardness data, without tensile testing being performed. Specifically, the mill test certification system includes a program to calculate tensile testing values from the hardness data, and if the hardness data is input, the system automatically calculates the tensile testing values (tensile strength, yield strength, and elongation).

Calculating the tensile testing values from the hardness data in this way appears to have taken place because tensile testing requires a lot of work-hours compared to other tests because it requires procedures such as preparation of test specimens, but because there is regarded to be a certain correlation between hardness and tensile testing values, they believed that there would not be a significant difference between actually conducting the test and just calculating it from the hardness data. This conversion calculation program

was introduced around 2005 at the latest, but it is unclear what review took place before introducing it.

The Technical Section for Extrusions' Section Manager in charge of inspections became aware of the calculation program when they received a report from mill test certification issuance personnel around July 2017 together with the report on the Brinell hardness data rewriting. Although the Technical Section for Extrusions confirmed the products requiring tensile testing pursuant to the standards and had gradually reformed inspection methods so that tensile testing would be performed, the mill test certification issuance system containing the calculation program was under the jurisdiction of the QA Department, so it did not result in remediation of that system.

3 The Root Causes and Background Circumstances of the Misconduct by TKC

(1) Misconduct

A. Earlier Case (TKC)

The description, time of commencement and root cause of the Earlier Case (TKC) are as set out in the table below.

[Table: Earlier Case (TKC)]

No.	Misconduct	Description of conduct	Time of commencement / Root cause
①	Shipment of Non-Conforming Products based on internal concessions[31]	If the internal quality assessment committee judged that non-conformances of Non-Conforming Products did not affect the performance or safety of the products,[32] it was determined for each of such Non-Conforming Products that it would be treated as internal	Carried out since at least 1998. Those who participated in the quality assessment committee were of the awareness that marginal deviations of appearance and dimensions would not cause any problems in light of the use of the product. With respect to the extruded

[31] TKC called shipment of Non-Conforming Products without obtaining approval from the customer and only based on internal judgement as "internal concession", as differentiated from "concession", which refers to shipment to customers after notifying the customers of the Non-Conforming Products and obtaining their approval.

[32] The quality assessment committee did not have a uniform judgement criteria, but made judgement by taking into consideration factors such as the degree of deviation from the specifications, the use of the product, and whether the relevant customer has approved concessions in a similar incident in the past.

No.	Misconduct	Description of conduct	Time of commencement / Root cause
		concessions.[33] In accordance with the decision by the quality assessment committee, the inspectors in charge of the Appearance and Dimension Inspection or Mechanical Testing (collectively, "**Inspectors**") conducted procedures to treat such Non-Conforming Products as passing products by rewriting or otherwise altering the dimension values set out in the drawings attached to Work Instructions or the values from the test data set out in the "Daily Material Quality Non-Conformance Report for Extruded Products" or other documents.	products, as a general tendency of the industry, it was often the case that the period until the delivery deadline was set short, and shipment often had to be made hastily. In addition, it was considered to be extremely rare that subtle deviations from the specifications significantly affected the performance and safety of the products. It was also rare that a complaint was received from a customer with respect to deviations from physical property specifications. Since the Yoro Plant had limited storage space for the products (work in process) under post-manufacturing inspection, it had to quickly finish inspections of the products and ship them.[34]
②	Judgment by Sales Department employee to ship Non-Conforming	If Sales Department employees reviewed a forwarded "withheld	The time of commencement is unknown. The root cause is basically similar to ① above, but it is

[33] Around 1998, "internal concessions" determined by the quality assessment committee solely concerned the Non-Conforming Products from the Appearance and Dimension Inspections. "Internal concessions" of Non-Conforming Products from the Mechanical Testing started around 2011, but the occurrence of such internal concessions was extremely rare.

[34] According to interviewees, if all manufacturing lines are operated, the storage space is fully occupied in a day.

No.	Misconduct	Description of conduct	Time of commencement / Root cause
	Products	product report" [35] and judged that the non-conformances would not affect the performance or safety of the product based on the past shipment details and other similar records, they determined for each of such Non-Conforming Products that the relevant products may be shipped. There were also cases where even if an application for concessions [36] was prepared at the discretion of the quality assessment committee, the Sales Department employees reviewed the details of the non-conformances and determined the shipment of the relevant products without notifying the customer. Similar to ① above, the relevant products were treated as passing through rewriting or otherwise altering of the test data by Inspectors.	likely that more weight was placed on the relationship with customers such as delivery deadlines.

35 If the judgement by the quality assessment committee is that an inquiry should be made to the Sales Department, the Sales Department will be forwarded a "Withheld Product Report."

36 If the quality assessment committee judges that the Non-Conforming Products are to be subject to "concessions", an "application for concessions" is prepared and forwarded to relevant Sales Department employees.

B. Misconduct (TKC)

The description, time of commencement, and root cause of the Misconduct (TKC) are as set out in the table below.

[Table: Misconduct (TKC)]

No.[37]	Misconduct	Description of conduct	Time of commencement / Root cause
③	Omission to conduct tensile testing by replacing it with the calculation of the tensile testing value	With respect to the products that require tensile testing under the specifications, the member of the Quality Engineering Section in charge of Mechanical Testing converted tensile testing values from the hardness measured using Hw via Quality Engineering Section's own formula. Even though they did not measure hardness or conduct tensile testing at the stage of the product inspection, they recorded the converted tensile testing value in the recording sheets such as Daily Material Quality Non-Conformance Report for Extruded Products. There were also cases where a person in charge of Mechanical Testing measured hardness using	Carried out since at least 2008. It was recognized that both the hardness and tensile testing values indicate the product strength, and are correlated with each other to some extent. Accordingly, it is possible that there was a belief that the calculation result would not make a significant difference from the values obtained from the actual tensile testing. In addition to the above, for tensile testing, it is necessary to prepare test specimens, and this requires more man-hours. It is therefore considered that the awareness grew that "it would be better to prioritize shipment, rather than increasing man-hours by conducting tensile testing," and the practice described at left became common.

[37] The numbering of the Misconduct is continued from the [Table: Earlier Case (TKC)] set forth in A. above.

No.[37]	Misconduct	Description of conduct	Time of commencement / Root cause
		Hw at the product inspection stage and converted it into a tensile testing value.	
④	Violation of the JIS requirements pertaining to the Mechanical Testing method	Under the JIS requirements, Material 6063-T5 [38] must undergo tensile testing or hardness measurement, and if hardness measurement is conducted, it must be based on Hv. However, the hardness measurement was conducted using Hw.	Carried out from around 2008, at the latest. The following are considered to be the root causes. ・Insufficient understanding of the JIS ・Instilled practices of ③ at the Yoro Plant ・Since Hv requires more man-hours for testing than Hw, an easier method was chosen as a result of prioritizing scheduled shipment
⑤	Creation of mill test certifications using an automatic creation system and shipment	With respect to the products with multiple characteristics[39], including Material 6063-T5, mill test certifications setting out fictitious tensile testing values were created, using a system that automatically calculates certain values as tensile testing values once the "weight" of the product and the "date" is input, regardless of whether	Carried out since at least October 2002. It is possible that the system mentioned at left was established because it was considered to be extremely rare that deviations from specifications requested by the customer significantly affected the performance and safety of the product, and it was also rare that a complaint was received from a customer

[38] Material 6063-T5 is the name of an extruded product, which is one of the main products of TKC.

[39] It is a process of changing the characteristics of a certain material by processing it, and through this process, a product with multiple characteristics is produced from one material.

No.[37]	Misconduct	Description of conduct	Time of commencement / Root cause
		tensile testing had been conducted or not.[40]	with respect to deviations from physical property specifications.
⑥	Rewriting of tensile testing values	With respect to the products other than Material 6063-T5, if tensile testing values did not meet the standards, Mechanical Testing examiners rewrote tensile testing data by hand in the "original table"[41] in which testing data is to be recorded and the "Daily Material Quality Non-Conformance Report for Extruded Products" so that the values fell within the specifications.	The time of commencement and the root causes are the same as ①. TKC has the work flow in which the products that have passed Appearance and Dimension Inspection are transferred to the packaging and shipment processes even if Mechanical Testing has not been completed. As a result, there were a number of instances where the products that failed tensile testing had already been shipped, and this indicates that there was a tremendous pressure for shipment.
⑦	Inspection methods failing to comply with the JIS	The tensile testing was conducted at a speed faster than the JIS.[42] Moreover, the tests [43] using the	The time of commencement is unknown. The following are considered to be root causes.

[40] Even for the products for which tensile testing showed values within the specifications or the products for which tensile testing values have been calculated through the conversion from the Webster hardness (see ④ above), the personnel in charge of issuing mill test certifications in the Quality Engineering Section did not use such actual measurement values or converted values as tensile testing values and entered fictitious tensile testing values showed in the automatic mill test certification creation system in mill test certifications.

[41] The "original table" refers to an A4-size table used by Mechanical Testing inspectors as a note to take down the tensile testing results. The Mechanical Testing inspectors take down testing results of several types of products in the original table and then copied such results to the "Daily Material Non-Conformance Report for Extruded Products."

[42] This means JIS Z2241.

[43] This means tensile testing, hardness measurement, bending testing and conductivity testing.

No.[37]	Misconduct	Description of conduct	Time of commencement / Root cause
		required number of samples for each lot as specified by the JIS requirements [44] were not conducted.	・Insufficient understanding of the JIS ・Lagging behind in upgrading the tensile testing instruments

(2) TKC's Response to the Above Misconduct

The shipment of Non-Conforming Products based on internal concessions or other arrangements described in (1)① and ② above was discovered in an extraordinary quality audit by MAC conducted on February 20, 2017. Based on the points raised by the extraordinary quality audit, on February 21, the following day, at the quality assessment committee attended by the then General Manager and Chief Engineer of the Quality Engineering Department and the Senior Engineer of the Quality Engineering Section, the internal concession system was abolished by the declaration by the Senior Engineer of the Quality Engineering Section.[45]

The hardness measurement using Hw and the conversion into tensile testing values described in (1)③ and ④ above was abolished around August 2017. TKC made a self-report of its violation of the JIS requirements due to the misconduct described in (1)① and ② above in July 2017, and was subject to an extraordinary review and suspension of the JIS certification by the JIS certification body in August 2017. In the meantime, the Plant General Manager and the then Chief Engineer of the Quality Engineering Department decided to remedy the hardness measurement method and started to replace it with the hardness measurement method using Hv so as not to be pointed out further inspection method irregularities or other issues in any subsequent extraordinary certification maintenance review or other investigations. However, since the Plant General Manager and other managerial staff did not receive any comment from the JIS certification body at that time, they believed it would be sufficient to make improvements within the plant one by one, and did not report to the TKC Head Office or MAC.

The automatic mill test certification creation system described in (1)⑤ above was suspended on September 22, 2017 at the direction by the Senior Engineer of the Quality

44 This means JIS H4100 and JIS H4080.

45 The abolition of the internal concession system was notified to the employees of the Quality Engineering Section, Extrusion Manufacturing Section, and Drawn Pipe Manufacturing Section and the Sales Department at their own day assemblies or other meetings during the period between February 22, the following day, and March 8.

Engineering Section, who became aware of the existence of such system.[46] However, the Senior Engineer of the Quality Engineering Section did not immediately report to the TKC Head Office or the Plant General Manager because he was busy responding to the suspension of the JIS certification and other related matters. Later, in the beginning of November 2017, the Senior Engineer of the Quality Engineering Section reported the existence of the system described above to the Plant General Manager. The President of TKC also became aware of it when he received a report from the Senior Engineer of the Quality Engineering Section or the Plant General Manager. The President of TKC and the Plant General Manager did not report the existence of the system to MAC because they wanted to avoid discovery of another issue right after the suspension of the JIS certification lifted on October 16, 2017 and also the automatic mill test certification creation system had already been suspended and thus the issue had been resolved.

For the rewriting of tensile testing data described in (1)⑥, the withheld product reports were not created. Accordingly, it was not reported to the quality assessment committee or discovered by the extraordinary quality audit conducted by MAC in February 2017, and was discovered in the special audit conducted by MMC in January 2018. Of the violations described in (1)⑦, the violation of the JIS requirements relating to the tension speed was also discovered in this special audit. After the discovery of the two instances, TKC immediately discontinued rewriting of test data and corrected the tension speed to match the JIS.

Of the violations described in (1)⑦, the violation of the JIS relating to the number of test samples in Mechanical Testing was discovered in the course of the Investigation. This incident has already been remedied based on the points raised in the Investigation.

(3) Background to how the Above Misconduct Started at TKC

The following points can be recognized as the background on how the Earlier Case (TKC) and the Misconduct (TKC) started.

First, it is found that there was a lack of sufficient awareness of complying with specifications agreed with customers. As described in (1)① through ③ and in ⑥ above, at TKC, Non-Conforming Products were shipped after rewriting test data if it was judged that there would be no problems caused to performance in light of the use of the products. Moreover, as described in ③ through ⑤ above, TKC did not conduct tensile testing that was required under the specifications agreed with the customers (including the specifications "compliant with the JIS") and in addition reported groundless and fictitious values to the customers.

Next, it is recognized that employees were not thoroughly familiarized with

[46] It was decided that Hv would be used for measuring hardness of Material 6063-T5 and as a result mill test certifications only stating Vickers hardness started to be issued. The personnel in charge of issuing mill test certifications in the Quality Engineering Section then believed it might no longer be necessary to issue mill test certifications created using the automatic mill test certification creation system and proposed suspension of such system to the Senior Engineer of the Quality Engineering Section, and this is how the Senior Engineer became aware of the system.

necessary knowledge. As described in (1)④ and ⑦, TKC did not conduct inspections and testing in accordance with the JIS, and this was due to the fact that Inspectors were not sufficiently familiarized with the details of the JIS that they should comply with.[47]

It is also possible that the quality assurance system related to inspections and testing as well as human and physical resources for the quality control system to reduce the occurrence of Non-Conforming Products were insufficient. TKC was lagging behind in upgrading testing instruments and other quality assurance-related equipment, and accordingly there were circumstances where it was, in the first place, difficult to fulfill the JIS in terms of equipment. With respect to the organization, in addition to a shortage of inspectors, since the Quality Engineering Department was established through the integration of the former Engineering Department (or the Quality Engineering Group of the Manufacturing Department) and the Former QA Department, there have been no department specialized in production technologies, including quality stabilization technologies. Consequently, coupled with the fact that employees were not familiarized with necessary knowledge, when it came to knowledge on production technologies, people only turned to the specific few employees who had experience in the Engineering Department, and in fact there was an interviewee who stated that not much progress had been made with respect to the efforts to improve manufacturing conditions to reduce the occurrence of Non-Conforming Products.

Additional affecting factors would be insufficient consideration of process capability at the time of receiving orders and pressures for shipment. It was mentioned that at TKC there are a number of products for which customer order was accepted without sufficiently going through the necessity[48] of required specifications and process capability with the customers. Moreover, as described in Chapter 2, Section 2 4(2)A. above, TKC had the work flow in which the products that passed Appearance and Dimension Inspections were transferred to the packaging and shipment processes even if Mechanical Testing had not been completed. As a result, as described in (1)⑥ above, there were a number of instances where the products that were found to deviate from the specifications had already been shipped, and under such circumstances, it is recognized that there was a tremendous pressure on Mechanical Testing inspectors in treating products as non-conforming products.

Lastly, the issue of awareness that was prevalent in the course of long-continued misconduct can be pointed out. Many TKC employees mentioned with respect to the misconduct described in (1) above that they carried out the tasks that they had taken over from their predecessors in a detached manner and never thought about adequacy of their tasks, and it is recognized that, in a way, employees simply depended on past practices. It is believed that this awareness was partly due to the background circumstances described above. In other words, it is possible that TKC employees were not provided with sufficient information that should have given them a chance to think about adequacy,

---

47 At TKC, employees were informed as to whether the JIS standards have been revised or not, but not the specific details of the revision or an impact on the business. Moreover, there was no briefing session or other event relating to the JIS standards.

48 Some interviewees mentioned that, looking at the products for which order TKC accepted in the past, many of them included specifications that were considered to be unnecessary in light of the use by the customer.

etc. of their work procedures because they were not sufficiently familiarized with necessary knowledge for their work. Moreover, it cannot be denied that employees may have been swamped with work and had no time to think about the meaning of their work or the conducts befitting a person in the manufacturing business due to the tight situation of the quality control and quality assurance systems and the tight work situation based on the shipment-oriented mindset.

Chapter 4 The Root Causes and Background Circumstances of the Misconduct

Section 1 Background to the Misconduct Having Continued Even After the Discovery of the Earlier Case

1 Scope of the subject of the Earlier Case Investigation was limited

As described in Chapter 3, Section 1 2(1) above, the Earlier Case Investigation was commenced to identify whether rewriting of test data was conducted with respect to the customers other than the two companies specified in the "Concession Measure Implementation Rules", with the focus on rewriting of test data based on the "Concession Measure Implementation Rules", and therefore whether there was a misconduct pertaining to the sheet and plate products in a manner other than specified in the "Concession Measure Implementation Rules". As a result, it did not result in discovery or remediation of the Misconduct pertaining to sheet and plate products described in Chapter 3, Section 1 2(1) above.

In the course of the Earlier Case Investigation, the former managers and the employees in the managerial positions for quality assurance for foil products and extruded products, respectively, were interviewed during the period from November 2016 to January 2017, but those interviews were conducted as part of the Earlier Case Investigation. Accordingly, the Earlier Case Investigation was not thoroughly conducted without interviews with other related parties or review of related documents and materials such as "Mechanical Testing Results Report".

In this way, the Earlier Case Investigation in fact focused on the "Concession Measure Implementation Rules" in the vertically-segmented organizations, and it is possible that this led to the Misconduct having continued.

2 Despite the actual opportunities to realize the Misconduct, they could not be exploited

As described in Chapter 3, Section 1 2(2) above, from November 2016 to January 2017, when the Earlier Case Investigation was taking place, the managers and those who previously in the managerial positions for quality assurance for foil products and extruded products, respectively, were interviewed, but at that time they were aware that rewriting of test data was being conducted (at least in the past) with respect to extruded products and foil products for certain customers. However, it appears that they thought reporting was unnecessary because it had already been resolved and answered at their own

discretion that there was no misconduct pertaining to extruded products and foil products without further verifying the facts in particular. It is believed that this is not irrelevant to their mindset that the issue is unrelated to or has a different nature from extruded products and foil products that they cover, or in other words, the issue was "someone else's business," because the issue at that time related to sheet and plate products and more specifically concerned rewriting of test data based on the "Concession Measure Implementation Rules".

In fact, MAC issued a message from the President and provided compliance education to the entire company as part of the measures to prevent recurrence of the Earlier Case from May 2017 through around summer. However, partly because such initiatives did not touch on the details of the Earlier Case, the employees involved in foil products and extruded products said, among other things, they felt that "it was merely an issue of sheet and plate products" or that "in the first place they did not understand the problem and did not know what to do even though compliance was advocated", etc. Thus it appears they merely considered the Earlier Case to be "someone else's business."

In addition, with respect to extruded products, the Earlier Case (TKC) was discovered at TKC, a subsidiary of MAC, in February 2017, and this was reported to the Response Furtherance Committee. However, MAC only recognized it as an issue of TKC, and there is no record of MAC having tried to investigate into whether there were other similar incidents at MAC. It is believed that this represents the fact that the Response Furtherance Committee also considered that the Earlier Case (TKC) was an issue of TKC, rather than an issue of MAC.

In this way, MAC had a number of opportunities to identify and remedy the Misconduct described in Chapter 3, Section 2 1 above, but failed to exploit them.

Section 2 The Root Causes and Background Circumstances Intrinsic to MAC

1 Low Awareness of Compliance with Specifications

As described in Chapter 3, Section 2 1 above, MAC shipped Non-Conforming Products that deviated from the specifications agreed with customers after rewriting test data for all of sheet and plate products, foil products, and extruded products over a long period of time.

It appears that the responsible personnel at the Technical Section for Sheet and Foil Products and the Technical Section for Extrusions tried to ensure a certain level of quality required for the product itself by, for instance, treating the products as passing only if the other inspection items of the same product are within the specifications or either of the two samples are within the specifications. However, they were not conscious of complying with the standards agreed with the customers, and it has to be said that the awareness of compliance with standards itself was reduced.

2 Attitude excessively prioritizing "receipt of orders" and "delivery dates"

The Fuji Plant started operation of extruded products, foil products and sheet and

plate products businesses in that order during the period between 1963 and 1964, and in the course of expanding these businesses, there were already competitors that were going ahead. Under such circumstances, in order to do business with new customers, it was necessary for MAC to have the customers who had already placed an order with a competitor switch to MAC, so there were cases where if a customer requested MAC for the specifications similar to the specifications for the order placed with a competitor, MAC prioritized winning the order and accepted the order based on the specifications requested by the customer without considering its own process capacities.

If MAC accepts an order beyond its process capacities, there are some cases where the manufactured products do not satisfy the specifications agreed with the customer, but in that case, if the products undergo re-inspection or re-manufacturing, it is likely to fail to make the delivery date. In such a situation, MAC sometimes obtained Customer Concessions, but for fear of damaging reputation from the relevant customer by repeating Customer Concessions, given the reasons such as that Customer Concessions had been obtained in the past and there were no major problems in product performance, meeting the initial delivery date for the time being was prioritized over negotiating the delivery date and the specifications with the customer.

3 Pressure on personnel in charge of products

With respect to the Misconduct, rewriting of test data was conducted in many instances at the judgement of responsible personnel in the Technical Section for Sheet and Foil Products and the Technical Section for Extrusions. On this point, it is likely that the mindset of prioritizing delivery dates at MAC as described in 2 above led to the pressure on the Technical Section for Sheet and Foil Products and the Technical Section for Extrusions, which actually conduct product inspections and are responsible for the judgment on how to treat Non-Conforming Products.

In particular, the Technical Section for Sheet and Foil Products and the Technical Section for Extrusions are the departments belonging to the Manufacturing Division, including the Sheet and Foil Plant and the Extrusion Plant, so in the Manufacturing Division that pursues the improvement of productivity to ship the products in compliance with a delivery date, it may have been placed in a difficult position to stick to the importance of “quality assurance”, which could delay shipment.

4 Harmful effects of the vertically-segmented organizations

(1) Vertically-segmented organizations for each product

MAC is divided into the Sheet and Foil Plant that manufactures sheet and plate products and foil products, and the Extrusion Plant that manufactures extruded products. The Sheet and Foil Plant had been divided into a sheet and plate mill and a foil mill until 2013. Under such manufacturing structure, as sheet and plate products, foil products, and extruded products undergo design, manufacturing and product inspection processes at the respective plants, the details of operations of the plants are completely divided from each other, and the personnel transfers between the plants were limited. After the Sheet and Foil Division was established, certain personnel exchanges started to some degree by, for

instance, having people from the sheet and plate product business take the role of managing the foil product division, but there were still few personnel exchanges between the Sheet and Foil Division and the Extrusion Division.

Under such circumstances, as described in Section 1 above, when the Earlier Case Investigation was conducted in November 2016, partly because it focused on rewriting of test data of sheet and plate products based on the "Concession Measure Implementation Rules", it cannot be said that sufficient investigation was conducted with respect to foil products, and extruded products, which are also products of MAC. The related parties to foil products and extruded products who were interviewed in the course of the Earlier Case Investigation answered that there were no misconduct for foil products, and extruded products without careful consideration, these products not being sheet and plate products. It is believed that the reason behind this is that both the investigating side and the investigated side took the Earlier Case in a "vertically segmented" framework in the manner that it is an issue of sheet and plate products and a "different kettle of fish (someone else's business)" from the perspective of foil products, and extruded products.[49]

(2) Vertically-segmented organizations of the Manufacturing Division and the Other Divisions

The "vertically segmented organizations" as described above are not limited to the "vertical segmentation" by product such as sheet and plate products, foil products, and extruded products.

Given the Earlier Case, MAC also attempted to ensure independence of the QA Department and implement cross-business quality assurance (research for quality stabilization and customer response) by the Quality Supervisory Department, but since the "vertically segmented organizations" that had been continued over years were ingrained, those two departments had little communication or other exchanges with the other departments, and both departments were understaffed, such that in reality it was difficult to say that the quality assurance functions expected of these departments were sufficiently fulfilled.

Moreover, as described in Chapter 3, Section 2 1 above, with respect to the inspection irregularities commonly observed for sheet and plate products, foil products, and extruded products, it was the Testing & Analysis Section of the QA Department that conducted tensile testing itself, but the Technical Section for Sheet and Foil Products and the Technical Section for Extrusions that requested tensile testing did not know whether the method of conducting tensile testing was in compliance with the specifications on the

---

[49] Conversely, there were also instances where it is recognized that personnel transfers contributed to the mindset of not considering irregularities to be "someone else's business" and resulted in the discovery of misconduct. Of the Misconduct, the instances of rewriting of Brinell hardness and the omission of tensile testing in relation to extruded products were discovered and remediated after the Section Manager in charge of inspections in the Tchnical Section for Extrusions received a report from the personnel in charge of issuing mill test certifications. The Section Manager received the report while he himself inquired and verified whether there were any misconduct pertaining to extruded products because he was aware of the fact that the Earlier Case Investigation was being conducted based on his experience in working in the Sheet and Foil Plant.

ground that tensile testing was the business of the Testing & Analysis Section.

In addition, as described in Chapter 3, Section 2 2(3) above, the Technical Section for Extrusions, which recognized around July 2017 that tensile testing values were converted from hardness even though tensile testing was not conducted and there was a program for such conversion, revised the procedure to ensure that testing required under the specifications are conducted. However, because the mill test certification issue system with the conversion program was under the jurisdiction of the QA Department, the system was not revised.

5 Failure to thoroughly familiarize employees with necessary knowledge

As described in Chapter 3, Section 2 1 above, MAC identified multiple inspection irregularity instances, including a violation of the tension speed requirement in tensile testing. The personnel responsible in the QA Department confirms revisions and other updates of the JIS that stipulates testing methods as necessary, and notified the departments relating to quality assurance such as the Technical Section for Sheet and Foil Products and the Technical Section for Extrusions whenever necessary, but did not check whether the content of notification was understood by the relevant responsible personnel or the content was appropriately reflected in the standards and the inspection methods. Therefore, it is recognized that as a consequence the relevant responsible personnel were not familiarized with necessary knowledge.

6 Dependence on existing practices without careful consideration

The Investigation found that the Misconduct continued over a long period of time. As the background to this, it is recognized that many employees of MAC did not question rewriting of test data at all which was taken over from their predecessors or instructed by relevant departments, and this attitude led to misconduct having continued as a kind of routine.

It has to be said that this indicates the fact that MAC’s employees lightly depended on existing practices without accurately understanding quality assurance and fully verifying whether their conduct fulfilled the objective, namely quality assurance.

Section 3 Issues with Control of Subsidiaries

1 Relationship between MAC and TKC

MAC, as the parent company of TKC, has been and is currently sending its officers and employees as secondees to TKC. In particular, the managers of TKC all consisted of secondees from MAC. However, given the nature of secondment, their service period was as short as approximately two years and the turnover of secondees was frequent .

On the other hand, with respect to the business collaboration framework between MAC and TKC, even though there were certain attempts such as study sessions for technical cooperation in the past, none of them were continual, and effectively the

collaboration was only through secondees.

2 Lax control over TKC

Under the circumstances described in 1 above, it has to be questioned to what extent MAC was able to control TKC.

In fact, as described in Chapter 3, Section 2 3(2) above, since August 2017 when the Earlier Case (TKC) was discovered, in response to the discovery of the issue that measurement was based on Hw, rather than Hv and of the automatic mill test certification creation system, TKC implemented the remedial measures for those issues, but no information was shared with MAC even though that was the decision of TKC itself.

Given the lack of a system to promptly share with MAC the above issues, which are directly connected to quality control at TKC, it cannot be recognized that the parent company's control over TKC was sufficient.

3 Insufficient reflection on MAC's own issues responding to the issues at TKC

In February 2017, an extraordinary quality audit of TKC conducted by MAC discovered the Earlier Case (TKC), which was also reported to MAC's Response Furtherance Committee.

However, no fact can be found that, in response to the Earlier Case (TKC), MAC examined its own practices from the perspectives of whether there are any similar issues with its own extruded products or whether there are any similar issues with sheet and plate products and foil products. If MAC had duly verified its own records relating to product inspections and conducted interviews in response to the Earlier Case (TKC), it would have been highly likely that MAC became able to discover the Misconduct earlier. Consequently, it can be viewed that MAC itself only considered TKC's issues as "someone else's business."

As described in Chapter 3, Section 2 3(3) above and Section 2 above, the Misconduct of TKC and MAC have a number of points in common not only in terms of the nature of Misconduct but also their root causes and backgrounds. It can be said that the facts that the similar root causes and backgrounds led to the same type of Misconduct continuing at MAC and its subsidiary, TKC, and that even though part of such Misconduct was discovered one after another, it took time to establish the whole picture of such Misconduct, indicate that there is an issue of control over the subsidiary as described in 2 above and also MAC failed to sufficiently reflect on its own issues.

Chapter 5 Recurrence Preventive Measures

Section 1 Recurrence Preventive Measures Formulated in Response to the Earlier Case

In response to the Earlier Case, from March 2017, MAC formulated the recurrence preventive measures as substantially set forth in the following table and implemented

them as necessary.

[Table: Recurrence Preventive Measures Formulated by MAC in Response to the Earlier Case]

Objective	Specific Measures	Status of Implementation
Confirmation of accuracy of mill test certification	Verify mill test certification with inspection equipment data by the QA Department; Conduct oversight by the Business Audit Department	Implemented with respect to the products subject to the Concession Measure Implementation Rules
	Establish a system in which any inconsistency between the content of mill test certification and inspection equipment data is recorded as a log	Commenced the operation with respect to all products
Enhancement of the awareness of "compliance" and "quality assurance"	Provide education on compliance and quality assurance Provide re-education on the whistle-blowing system	Provided compliance education tailored to each level of officers and employees in order from June 2017
Strengthening of quality assurance management	Ensure independence between the QA Department and the Technical Section for Sheet and Foil Products by strictly separating them • Have the employees who concurrently work in both the QA Department and the Technical Section for Sheet and Foil Products work exclusively in the QA Department • Transfer the product inspection process under the jurisdiction of the Technical Section for Sheet and Foil Products to the QA Department	Terminated double-hatting of the employees Currently considering the details of the transfer of the product inspection process to the QA Department

Objective	Specific Measures	Status of Implementation
	Establish the system in which test data may not be rewritten	Considering the establishment
	Establish the Quality Supervisory Department	Established the Quality Supervisory Department as an organization directly reporting to the President as of July 1, 2017 This department has the following duties. • Quality audit • Planning and proposal of matters such as the measures to strengthen the quality assurance framework • Management of quality-related matters of the entire Group
Strengthening of monitoring	Implement quality audit of MAC and its subsidiaries on a regular basis	[MAC] MAC conducted quality audits to confirm whether Non-Conforming Products that deviated from the specifications under delivery specifications had been shipped with respect to sheet and plate products, foil products and extruded products, and as a result no such instances were confirmed. The Quality Assurance Department will be audited

Objective	Specific Measures	Status of Implementation
		in April 2018. [Subsidiaries] MAC conducted quality audits of subsidiaries, including overseas subsidiaries by January 23, 2018 to confirm whether Non-Conforming Products that deviated from the specifications under delivery specifications had been shipped, and as a result no such instances were confirmed.
Checking of the quality assurance management by managers	Establish a council or a similar body to confirm the PDCA cycle for the quality assurance management	Continuously handled by the Response Furtherance Committee
Fundamental improvement of the product process capacities	Improve process capacities; Request customers to change the specifications	Implemented with respect to the products subject to the Concession Measure Implementation Rules and the customers

However, the above recurrence preventive measures were limited from the viewpoint of the relationship with the Misconduct as described below.

① Implementation of the recurrence preventive measures focusing on the "Concession Measure Implementation Rules"

The verification of test result reports between mill test certification and testing equipment data and the request for a change to the specifications to the customers were limited to the products subject to the "Concession Measure Implementation Rules" because these measures were intended to prevent recurrence of rewriting of test data based on the "Concession Measure Implementation Rules", and therefore these measures failed to prevent misconduct other than rewriting of test data based on the Concession Measure Implementation Rules.

The quality audit for fiscal 2017 conducted in MAC only confirmed whether Non-

Conforming Products for which a "Non-Conformance Report" ("Withheld Product and Processing Repor"t in the case of extruded products) was drafted had been shipped, and did not lead to the discovery of Misconducts. However, as described in Section 2 2(3)A., the Technical Section for Extrusions ended rewriting of test data by the Quality Committee due to the inspection of the "Withheld Product and Processing Reports" by the quality audit. Accordingly, it is recognized that in this respect the quality audit exerted a certain function as a deterrence to the Misconduct.

② Compliance education without information sharing regarding the past misconduct

As described above, MAC provided compliance education tailored to each level of officers and employees in sequence from June 2017. However, partly because MAC had not announced the Earlier Case when this compliance education was provided, in consideration of the necessity for information management, the compliance education, particularly the one for general employees, did not clearly explain the details of rewriting of test data based on the Concession Measure Implementation Rules and only stated that a breach of compliance had been identified.

As a result, the awareness of the issue was not accurately shared with the employees who received the compliance education and the compliance education did not fully function as an opportunity to review the adequacy of the Misconduct.

③ Insufficiency of reform of quality assurance framework

As described above, in order to strengthen the quality assurance framework, MAC establish the Quality Supervisory Department as of July 1, 2017 as an organization directly reporting to the President and independent from the manufacturing division, and which is exclusively engaged in the quality assurance-related duties such as quality audit.

However, the Quality Supervisory Department currently has two members at this point and in fact it is difficult for them alone to cover quality audit, which was assigned as the duties of the Quality Supervisory Department when it was established. In other words, under the current situation, it is difficult to say that the Quality Supervisory Department has necessary and sufficient human resources to fulfill the check-and-balance function relating to the quality assurance-related duties.

Section 2 Proposal of the Preventive Measures in Response to the Discovery of the Misconduct

1 Introduction

In consideration of the discovery of the Earlier Case, MAC formulated and implemented the recurrence preventive measures as mentioned in Section 1 above. These

measures yielded certain results,[50] serving as an opportunity to end part of the Misconduct. However, in light of the points described in ① through ③ in Section 1 above, the preventive measures fit for remediation of the discovered issues but failed to root out the misconduct at MAC.

Moreover, in the course of the interviews in the Investigation, many employees pointed out the issue with MAC's corporate culture itself.

Given the abovementioned point raised by the employees and others in addition to the factual circumstances leading up to the previous recurrence preventive measures, in order to eradicate the misconduct, more in-depth reform of corporate culture would be essential.

To that end, we propose the recurrence preventive measures taking the discovery of the Misconduct into account, including the remake of corporate culture, as follows.

2 Reaffirming the importance of quality assurance and reestablishing the company-wide quality assurance framework

MAC sustained the framework in which the Technical Section for Sheet and Foil Products and the Technical Section for Extrusions, which belong to the manufacturing division, had all responsibilities for the judgment on how to handle Non-Conforming Products. As a result, it cannot be denied that in judging how to handle Non-Conforming Products, the perspective of production efficiency with the goal of meeting the delivery deadline through, among other things, efforts not to produce waste for disposal or reprocessing was valued, and the quality assurance perspective of "shipping the products that are in compliant with the standards" took a second place. Reflecting on this situation, MAC needs to reaffirm the importance of the significance of "quality assurance" and reestablish the framework to ensure quality assurance.

Specifically, it is necessary to clarify the respective roles of the Quality Supervisory Department and the QA Department which are independent of the manufacturing division, and have them fulfill the cross-sectional management and supervisory functions with respect to quality assurance by laterally covering the entire manufacturing division. Moreover, it would be also essential to secure sufficient number of personnel and establish a system that ensures authority so that the Quality Supervisory Department and the QA Department can exert their own roles to the fullest extent.

It is also considered that the enrichment of "quality assurance" is not realized only through the improvement of process design or enhancement of product inspections but is realized through multifaceted consideration and verification from various view points from manufacturing, production engineering, research and development, sales, and other functions. Accordingly, it is desirable to establish a company-wide quality assurance

[50] For instance, of the Misconduct, with respect to the incident of foil products in which when the elongation value deviated from standards as a result of tensile testing, the personnel responsible for mill test certification issuance would rewrite test data, it was discovered and abolished after the personnel in charge of mill test certification, who received the compliance education described in Section 1 above, themselves reported to the Assistant Plant General Manager managing foil products.

framework under the initiative of the Quality Supervisory Department and the QA Department, in which the Technical Section for Sheet and Foil Products, Products Research and Development Department, Engineering Department, Sales Department, and so forth have clear roles in line with their own positions. As a foundation of such quality assurance framework, it is desirable to enhance the educational system that reminds each and every employee of the significance and importance of "quality assurance."

Specific measures to make such quality assurance system effective would include, for instance, the establishment of a cross-product "quality assurance system" independent of product-specific production control systems and the implementation of educational programs targeted at a wide range of officers and employees, even including management members and employees of the Head Office, under the initiative of the Quality Supervisory Department.

3 Fostering Risk Awareness Regarding "Contractual Breaches"

The standards set forth in the delivery specifications were part of the agreements with customers, and it is undeniable that there was an extremely shallow awareness at MAC of the fact that non-compliance with those standards meant a breach of contract.

The decision to prioritize the delivery deadline taking into account the small impact on the performance, etc. of products can, from one perspective, be said to be guessing at the customer's desire to avoid causing any problems for their production lines due to late delivery, as long as there is no effect on product performance, etc. However, the obligation to "deliver a product in accordance with the agreed standards" is nothing less than a contractual obligation owed to the customer. Therefore, the shipment of Non-Conforming Products is objectively a breach of contract, even if the judgment to do so was based on an assumption as to the customer's wishes. Furthermore, if the customer incurred damage due to the shipment of Non-Conforming Products, it is undeniable that MAC would consequently be liable for a failure to perform its contractual obligations, which in some cases would give rise to losses that far exceed the losses associated with disposing of Non-Conforming products.

It is necessary to develop risk awareness of the breaches of contract like those described above, not only at the Fuji Plant, but at headquarters and on the part of management personnel responsible for sales functions.

4 Fostering an Understanding of the Fact that "Improving Corporate Value Generates Profits"

Not a few employees pointed out that traditionally, MAC focused too heavily on winning orders and continued order winning activities with disregard to its production capabilities. This corporate culture consequently undeniably helped to force the responsible personnel in the Technical Section for Sheet and Foil Products and Technical Section for Extrusions to rewrite test data, and lead to the Earlier Case and the Misconduct. In addition, the fact that activities to win orders, like those described above, were carried out is evidence demonstrating a very low awareness of the importance of "abiding with the agreement with the customer" and "delivering products with quality

conforming to customer requests."

Changes to the nature of companies brought on by market globalization, etc. mean that nowadays, companies can no longer get away with just chasing profits, and they must seek to generate value for a wide variety of stakeholders. In particular, consumers now watch manufacturers much more carefully due to the recent increase in scandals and quality problems in the manufacturing industry. It is undeniable that, in this kind of environment, continuously acting with integrity with respect to customers and heightening trustworthiness as a company – even by going as far as to increase the number of work hours to ensure quality or limiting the scope of orders accepted to those orders that are suitable in terms of the company's production capacity – will conversely lead to profits.

Based on the above, we believe that, rather than viewing the acquisition of orders from a short-term perspective as their only source of profit, MAC needs to establish awareness that the improvement of corporate value from a broad perspective will ultimately generate even larger profits. In particular, we were told that the recent expansion of product fields and market globalization have meant that MAC has to develop new customers. As new customers lack the established relationship built up from a history of business transactions, new customers have to pay even closer heed to the reputation of potential business partners. In order to promote the development of new customers, MAC has to enhance its standing as a business by executing its business with integrity and maintain a good reputation in the market.

5 Fostering a Corporate Culture where Each Employee Thinks of MAC's Mission as a Company and the Significance of Their Own Work

As described in 6 of Section 2, Chapter 4, most employees continuously carried out misconduct as part of their routines, without a second thought. It is undeniable that the background to this was the fact that most employees relied on succession orientation carried out by their predecessors, and the fact that they carried out their duties without taking into consideration MAC's corporate mission and the significance of their own jobs.

Moreover, this situation cannot be brushed aside as something that arose due to the attitudes of individual employees. As described above in 4 and 5 of Section 2, Chapter 4, we found that the implementation of the company-wide quality assurance framework, such as quality assurance training, at MAC was insufficient, which led to employees engaged in quality assurance work to have been provided with insufficient information in light of MAC's corporate mission and the importance of their own jobs. It is the duty of management and headquarters to provide them with such information and to establish an environment where each employee can engage in their duties independently.

At MAC, management is required to take the initiative and take measures to let each employee understand MAC's corporate mission and the significance of their jobs, rather than leaving it up to the Fuji Plant.

6 Necessity of Having an Awareness of MAC as Company and a Corporate Group

As discussed above in 4 of Section 2, Chapter 4, MAC is organized vertically based on product groups, which led to employees engaged in business for different product groups, and employees in manufacturing and other departments, having a low awareness of one another being employees of the same company.

Meanwhile, at MAC, after the Sheet and Foil Division was established, employees from sheet and plate product divisions assumed positions as managers overseeing foil product departments at the Fuji Plant, and as discussed above in 1, and we found that MAC had made some progress establishing interactions with personnel that overcame the barriers of the departments to which they belonged, such as by establishing quality supervisory departments independent from manufacturing departments. Going forward, MAC should encourage proactive interactions between personal and the exchange of quality assurance information, with the Extrusion Division and the Raw Material Division as well. Interactions should be encouraged between employees engaged in actual work practice, as well as site manager rank employees.

With respect to the management of TKC as well, based on the historic background described above in 1 of Section 2, Chapter 2, it can be cited that employees of MAC and employees of TKC have a very low consciousness of being employees of the same corporate group.

Although it can be recognized that there was a certain degree of interaction between employees such as MAC's Information Systems Department seconding personnel to TKC as system managers, with respect to product engineering and quality assurance engineering, etc. there was found to be a lack of frequent technical interaction between the companies. In addition, until February 20, 2017 after discovery of the Earlier Case (TKC), MAC never audited TKC for quality assurance matters.

Based on these circumstances, the cooperative framework between group companies with MAC as the managing entity is recognized to still be insufficient in the MAC group including MAC and TKC. This is also regarded as an indirect cause resulting in MAC's failure to use the Earlier Case (TKC) as the opportunity to conduct a detailed investigation of whether there was misconduct at MAC.

MAC must be aware that, as the parent company of each of the MAC Group companies, it needs to establish a group-wide quality assurance framework. Therefore, when establishing a group-wide quality assurance framework discussed above in 2, the MAC Group must pay heed to quality assurance throughout the entire MAC Group as a corporate group, and the framework must address those requirements.

END

Exhibit (Timeline)

Date	MAC-related	TKC-related
2016.11	MAC conducts internal investigation and discovers the Earlier Case.	
2016.11-2017.1	In the course of the Earlier Case Investigation, interviews are conducted with employees with experience in the quality assurance management for foil and extruded products and management-level employees.	
2017.2.20		MAC conducts an extraordinary audit of TKC and discovers the Earlier Case (TKC) at the Yoro Plant.
2017.2.21		MAC's Internal Audit Department reports the Earlier Case (TKC) to the Response Furtherance Committee.
2017.7.24		TKC voluntarily reports the Earlier Case (TKC) to the Ministry of Economy, Trade, and Industry and JTCCM as a violation of the JIS requirements.
2017.8.1		JTCCM conducts an extraordinary JIS certification maintenance investigation of TKC.
2017.8		Hardness testing using Hw and rewriting of tensile testing is abolished at the Yoro Plant, which leads to the discovery of the automatic mill test certification generation system.
2017.8.21		JTCCM temporally revokes TKC's right to display JIS certification, and TKC temporarily ceases to display the JIS certification.
2017.9.22		Use of the automatic mill test certification system is suspended at the Yoro Plant.
2017.9.29		JTCCM conducts re-investigation of TKC with respect to JIS certification.
2017.10.16		JTCCM withdraws its order temporarily suspending TKC's right to display JIS certification, and TKC resumes display of JIS certification.
End of 2017.11	Rewriting of elongation results for some foil products and rewriting of surface roughness results for some sheet and plate products using a multiple are discovered at the Fuji Plant.	
2017.12.9	JSA conducts an extraordinary investigation with respect to ISO 9001, which cites the fact that JSA could not confirm that remedial measures targeting the Earlier Case were effective.	
2017.12.18-19	JQA conducts an extraordinary investigation of MAC and discovers that MAC's re-inspection methods, etc. violate JIS requirements.	
2017.12.25	JSA temporarily suspends MAC's ISO 9001 certification.	
2017.12.25-2018.1.28	MMC conducts a special audit of MAC and discovers misconduct such as the rewriting of data, in different manners from those demonstrated in the Earlier Case.	
2018.1.12	JQA revokes MAC's JIS H 4000 and JIS H 41000 certifications.	
2018.1.15-22		MMC conducts a special audit of TKC and discovers the Misconduct (TKC).

Annex 2

To: Special Investigation Committee of Mitsubishi Materials Corporation

March 27, 2018

Investigation Report

(Concerning the actual state of the framework for quality control of sintered products at the Niigata Plant of Diamet Corporation)

Nishimura & Asahi

Attorney Takashi Shibuya

Attorney Ryutaro Nakayama

Attorney Jun Katsube

Attorney Tomoyuki Numata

Attorney Toshiki Kitazumi

Attorney Jumpei Hotta

Attorney Natsuki Hosoya

Attorney Mitsuki Kono

Attorney Tomoyuki Kawanishi

This is a report on the investigation ("**Investigation**") Nishimura & Asahi conducted that was commissioned by the Special Investigation Committee ("**MMC Special Investigation Committee**") established by Mitsubishi Materials Corporation ("**MMC**").

This report summarizes the results of the investigation, analysis, etc. that were conducted as much as possible and believed to be appropriate within the given time and conditions, and there is a possibility that the conclusions or other aspects will change if new facts or other details are discovered. Please also be aware that this report does not guarantee any judgement of the courts or decisions of other relevant regulators, etc.

Table of Contents

Page

Section 1 Circumstances Leading to the Investigation and the Purpose of the Investigation

As described in Section 4.1 below, through notice to MMC's Internal Contact Office, as of approximately August 2016, MMC discovered that there had been misconduct including process change not authorized by customers of Diamet Corporation ("**DM**"), MMC's wholly-owned subsidiary, and shipment of products that deviated from the range of specifications agreed with DM's customers ("**Customer Specifications**") (hereinafter, deviations from Customer Specifications are referred to as "**Non-Conformance**," and products with Non-Conformance are referred to as "**Non-Conforming Products**") at DM's Niigata Plant ("**Niigata Plant**") (the circumstances of this misconduct, etc. that MMC discovered at the time are hereinafter referred to as the "**First Discovered Incidents**").

As described in Section 4.3 below, an internal investigation committee, including external lawyers, had investigated facts and determined the root causes, and there has been formulated and implemented the recurrence preventive measures against the First Discovered Incidents. In addition, after the discovery of the First Discovered Incidents, DM had notified, in sequence, customers to whom DM shipped the products relating to the misconduct as described in Section 4.2 below, and completed those notifications and received confirmation that there was no safety issue.

After that, there was a notice to MMC's whistleblower hotline on January 24, 2018, informing of a possibility of incorrect recording of inspection data at DM, and MMC made an investigation by conducting interviews of concerned individuals of DM. MMC found that misconduct, including shipment of the Non-Conforming Products, which is one of the misconduct in the First Discovered Incidents, had been continuing in the Niigata Plant ("**Later Discovered Incidents**"), and therefore, MMC's special audit on DM was conducted from January 30, 2018. In light of the seriousness of the situation, MMC initiated an investigation to discover the facts related to the Later Discovered Incidents based on an instruction from the MMC Special Investigation Committee established as of December 1, 2017 by MMC, and made an announcement regarding the Later Discovered Incidents on February 8, 2018.

The MMC Special Investigation Committee determined that it would be necessary to perform a thorough investigation from an objective and neutral perspective, and it requested that Nishimura & Asahi conduct an investigation and review with the following objectives:

① Investigate the actual state of the framework for quality control of sintered products[1] in the Niigata Plant (including investigation on the First Discovered Incidents and the Later Discovered Incidents);

② Analyze the root causes and background circumstances based on the

[1] Sintered machinery parts ("**Machinery Parts**"), sintered oil-impregnated bearings and sintered special alloy (hereinafter, sintered oil-impregnated bearings and sintering special alloy are collectively referred to as "**Functional Parts**").

results of the fact-finding review of ① above; and

③ Propose measures to prevent recurrences based on the analysis of ② above.

Section 2 Progress on the Investigation

1 Overview of the Investigation and the investigation framework

Based on the circumstances in Section 1 above, Nishimura & Asahi performed the investigations described in ① through ③ below:

① A detailed review of relevant materials;

② A digital forensic investigation of email data, etc. possessed by relevant parties; and

③ Interviews of relevant parties.

The Investigation was led by attorney Takashi Shibuya and ten other attorneys of Nishimura & Asahi, who have no interests in DM. Additionally, an expert forensic vendor was engaged to assist with the Investigation under the direction and supervision of Nishimura & Asahi.

Nishimura & Asahi commissioned such forensic vendor, to the extent necessary and possible, to collect email data on DM's email servers and individual PCs and mobile phones issued to the relevant parties by DM. The forensic vendor was also commissioned to narrow down the data and conduct a first-level data review under Nishimura & Asahi's direction.

2 Detailed review of relevant materials

Nishimura & Asahi collected the materials that currently exist at DM relating the actual state of the framework for quality control of sintered products at the Niigata Plant (policies and procedures relating to quality control, inspection records, audit-related materials and materials from quality-related committees, etc.) and performed a detailed review and verification of their content.

3 The status of conducting digital forensic investigation

As stated in 1 above, Nishimura & Asahi preserved, to the extent necessary and possible, the data from preserved email data from individual PCs and mobile phones issued to the relevant parties by DM and DM's email severs and other email data from a total of twenty three (23) officers and employees who are involved in the sintered products business at the Niigata Plant.

Due to the time constraints on the Investigation, it was necessary to apply reasonable limits to the data that was preserved, so Nishimura & Asahi decided to extract data using keyword searches, setting the target period as January 1, 2016 to January 31,

2018. With respect to the data for which extraction was completed by the Reference Date stated in 5 below, the forensic vendor mentioned in Section 1 above conducted the first-level data review, and Nishimura & Asahi conducted the second-level data review. This report is based on these materials.

4 The status of conducting interviews

In order to make clear the actual state of the framework for quality control of sintered products at the Niigata Plant, Nishimura & Asahi conducted interviews with a total of forty one (41) officers and employees of DM up until the Reference Date stated in 5 below. We note that some interviewees were interviewed multiple times.

5 The Reference Date for the Investigation

The Investigation began on January 29, 2018. The reference date for this report is March 26, 2018 ("**Reference Date**"), and the description below summarizes the facts, results of examination, etc. that have become known as of this Reference Date.

Section 3 Overview of the Niigata Plant

1 Details on the business and products handled by the Niigata Plant

Mitsubishi Mining Company Ltd. (current MMC) began operations at the Niigata Metals Plant (currently the Niigata Plant) in 1944. Since beginning to manufacture sintered oil-impregnated bearings in 1947, The Niigata Plant has been manufacturing Machinery Parts, such as those for variable valves and transmissions and oil pump rotors; sintered oil-impregnated bearings, such as bearings for fuel pumps, electronically controlled throttle and exhaust gas recirculation systems; and sintering special alloy, such as soft magnetic cores, wear resistance materials and stainless parts. It has been selling these products mainly to auto parts manufacturers.

In 1987, MMC established the Fujioka Plant (now the Fujioka Plant of DM; the "**Fujioka Plant**") and expanded globally by establishing sintered product production facilities in the US in 1988, Malaysia in 1993, and China in 2005.

In December 2005, MMC split off its sintered products business and transferred control of its sintered products business to Mitsubishi Materials PMG Corporation ("**MMPMG**"), a joint venture with the Austrian company Plansee Holding AG ("**Plansee**"). In December 2009, the joint venture between MMC and Plansee was dissolved, with MMPMG becoming a wholly owned subsidiary of MMC and being renamed Diamet Corporation, in which form it has operated to this day.

A special feature of DM's products comes from its manufacturing method called "powder metallurgy (*funmatsu yakin*)." The powder metallurgy is a way of producing metal parts by solidly pressing metal powders and combining them by heating.

2 The organizational structure and division of operations at the Niigata Plant

Divisions taking part in receipt of customers' orders, development, manufacturing and inspections are the Sales & Marketing Division, Production Engineering Division, Research & Development Department, Production Division, and the Quality Assurance Division. Each division's or department's operation is described in the chart below. The chart below is based on the organizational structure of DM as of January 2018, because the Investigation is initiated due to a discovery of the Later Discovered Incidents in January 2018.

Name of Division		Operation
Sales & Marketing Division	Tokyo Branch, Nagoya Branch, Osaka Branch	Matters related to sales and marketing for customers in each region and their overseas affiliates
	Sales Engineering Department	Matters related to responding to customers' technological needs in sales activities
Production Engineering Division	Machinery Engineering Department	Matters related to outsourcing control, subcontract act, managing costs of materials and processing technologies
	Production Engineering Department	Matters related to production technology, facility and engineering
Research & Development Department	Machinery Parts R&D Section	Design, prototype production, material development and production method development, etc. of Machinery Parts
	Functional Parts R&D Section	Prototype production, material development, etc. of Functional Parts[2]
Production Division[3]	Niigata Mold Section	Matters related to production and repair of molds and press jigs
	Functional Parts Manufacturing Section	Matters related to design, prototype production and production of bearings and special alloy products (valve seat products, etc.)
	Small Parts Manufacturing Section, Large Parts Manufacturing Section	Matters related to the manufacture of Machinery Parts

[2] Design of the Functional Parts is taken charge by the R&D Unit of the Functional Parts Manufacturing Section of the Production Division (currently the Functional Parts Department).

[3] Due to the organizational structure change as of February 15, 2018, the Mold Production Department that supervises the Niigata Mold Section and Fujioka Mold Section, the Functional Parts Department that is promoted from a section to a department, the Machinery Parts Manufacturing Department that supervises the Small Parts Manufacturing Section, Large Parts Manufacturing Section and Material Performance Control Section, and the newly established Machinery Parts Engineering Department are placed under the Production Division.

Name of Division		Operation
	Material Performance Control Section	Matters related to the supply of Machinery Parts materials
Quality Assurance Division, Quality Assurance Department	Niigata Quality Assurance Section	Matters related to quality assurances for products
	Niigata Quality Control Section	Matters related to quality control, analysis and inspection of products

3 Operational flow from receipt of order to shipment of sintered products

The following explains operational flow from receipt of order to shipment for the Machinery Parts.

(1) Receipt of order, design and process design

A Preparation of written quotation and determination of receipt of order for a new product

When each of DM's branches and sales offices receives an inquiry from a customer for a new product, they send a request to the responsible employee of the Sales Support Section of the Business Administration Department to prepare a written quotation. The personnel of the Sales Support Section jointly confirm degree of difficulty, etc. of the customer's request with the responsible employee of the Machinery Parts R&D Section of the Research & Development Department, and a meeting (DR0 referred to in C below) is held based on a judgment of the General Manager of the Business Administration Department if responding to the customer's request is difficult because of a technical reason or otherwise. The personnel of the Machinery Parts R&D Section prepare a written quotation based on the specification agreed upon with the customer, and obtain an approval of it from the General Manager of the Research & Development Department after a consultation with the customer on alteration of the customer's request, if adjustment of the customer's request is necessary because it is deemed difficult, etc., to meet the customer's request on the specification by taking into account the review of the customer's request and the result of the meeting. Afterwards, the customer verifies discrepancies, etc. between the customer's order and the quotation and places an official order if there is no problem.

B Production of sample, determination of specification and production and inspection process

After a formal determination is made to accept an order, the employee of the Sales Support Section of the Business Administration Department directs the employee in

charge of prototype production in the Machinery Parts R&D Section to produce a sample in accordance with a sample specification issued by each branch and sales office.

There are two types of samples which are produced before mass production. One is made by machining a sintered block, such as cutting (entire processing), and the other, called a new mold sample, is made by producing a mold in the same way as for a real product. The entire processing sample is made at first, and customer's approval is obtained after.

The new mold sample starts to be produced after the customer approves a sample (entire processing) and places an order for the new mold sample. The employee in charge of design in the Machinery Parts R&D Section initiates the design process when a branch or sales office issues a production order of the new mold sample to the Machinery Parts R&D Section. The design is conducted in the order of (a) drafting of a written design plan, (b) review of a drawing, and (c) review and approval of the drawing by the Manager of the Machinery Parts R&D Section. Following these processes from (a) to (c), a meeting chaired by the Machinery Parts R&D Section as the responsible department is held among the employees of the Sales Support Section of the Business Administration Department, the employee in charge of the design, the manufacturing section, and the quality assurance section, etc., in order to discuss related issues on process designing such as product drawing, mold drawing, and process specification sheet[4] (DR2 referred in C below). In light of the discussions in such meeting, the designer from the Machinery Parts from the R&D Section[5] designs the process, based on which the aforementioned documents such as product drawing, mold drawing, and process specification sheet are prepared and technical registration is conducted.[6] Moreover, the documentation management personnel of the Niigata Quality Assurance Section prepare the QC process chart,[7] referring to the product drawings and process specification sheet, and the details of the technical registration. This process determines all of the processes for manufacture and inspection of the product in question.[8] Based on the product drawings, etc., the documentation management personnel of the Niigata Quality Assurance Section also prepare the inspection specification document that sets forth the details of final inspection. Then, the new mold sample is created and delivered to the customer, followed by mass

---

[4] A process specification sheet is a standard operational document that specifies administrative items in the process of production of each product, in-process inspection specifications, and precautions for the operation, etc.

[5] The Design Unit of the Functional Parts, Production Division handles the process design for Functional Parts.

[6] Specifically, entering the process settings (what kind of process to be conducted in what order) in DM's system for the product in question.

[7] The QC process chart is a document which sets forth each process from production to shipment of a product, the name of a document which specifies the machine facilities used and the specification or the standard that shall be complied with in each process and inspection method, etc. Each of the QC process chart and the technical registration mentioned above contain process-related information, but while the technical registration was for registering the process-information shared within DM, while the QC process is created as a document to be submitted to customers.

[8] The Production Control Unit of each Manufacturing Section (the Large Parts Manufacturing Section, the Small Parts Manufacturing Section and the Functional Parts Manufacturing Section (currently the Functional Parts Department)) of the Production Division determines how to proceed along with the determined process for each product.

production after the customer's approval. It takes a year or two from an inquiry to an approval of a new mold sample by a customer.

C Design Review (DR)

DM conducts a design review ("**DR**") in five steps in total pursuant to a written design plan, starting from the quotation to the beginning of mass production as necessary. The breakdown of the five steps is as follows:

① DR0 At the quotation stage, as the responsible department, the Business Administration Department leads review of issues from the perspective of facility capacity and technical capacity among an employee of the Sales Support Section of the Business Administration Department, a design employee of the Machinery Parts R&D Section, and an employee of the relevant production section.

② DR1 At the stage of instruction for creation of a new mold sample, a design employee of the Machinery Parts R&D Section and the Manager of the Machinery Parts Section, etc., review the customer's specifications.

③ DR2 At the process design stage, as the responsible department, the Machinery Parts R&D Section leads the examination of the process design, etc., among an employee of the Sales Support Section of the Business Administration Department, a design employee of the Machinery Parts R&D Section, an employee of the section in charge of the product, an employee of the Quality Assurance Section, etc.

④ DR3 At the stage of manufacturing an initial product of mass production, as the responsible department, the Machinery Parts R&D Section leads sharing issues at the stage of sample production with the Production Division (and succeeds mass production to it) among the Manager of the Sales Support Section of the Business Administration Department, the Manager of the Machinery Parts R&D Section, the manager of the section in charge of the product, and the Manager of the Quality Assurance Section, etc.

⑤ DR4 At the stage of approving transition to mass production, the director in charge of Research & Development, the Deputy General Manager of the Production Division, each manager of production sections, the General Manager of the Research & Development Department, and the Manager of the Machinery Parts R&D Section, etc., participate

in confirmation of issues designated in DR3, and the director in charge of Research & Development approves the transition.

(2) Production process

Products produced in the Niigata Plant are done so through the processes of powder mixing, compacting, sintering, sizing, and after-treatment (machine processing, heat processing, and oil impregnation). Some products completely omit the after-treatment, and others require only a specific part of it (for example, machine processing only).

In the powder mixing process, the weight of various metal powders is measured by a scale for a specific composition and raw materials are formed by mixing the powders uniformly with a mixer. The powder mixing process is conducted by the Powder Mixing Unit of the Material Performance Control Section.

In the compacting process, a compacting mold is filled with t raw materials, and a compacted block is formed by pressing the powder, raw materials, with a uniaxial press machine.

In the sintering process, the sintered block is made by heating the compacted block at high heat.

In the sizing process, the sintered block is placed into a high-precision mold again, and its dimensions are improved and its shape is fixed by pressing with the press machine.

The Small Parts Manufacturing Section or the Large Parts Manufacturing Section conducts processes from compacting to sizing depending on variation of the Machinery Parts.[9]

In the after-treatment process, machine processing which adjusts dimensions by processes such as cutting, as well as processes such as heat processing to enhance hardness, are conducted. The Material Performance Control Section is responsible for and conducts the after-treatment process. Out of the entire after-treatment process, machine processing is outsourced to cooperative companies of DM by the Material Performance Control Section because of the lack of a machine processing facility in the Niigata Plant (outsourced processing).

Following each process above, appearance of every product is inspected. This inspection is conducted by either the Small Parts Manufacturing Section or the Large Parts Manufacturing Section depending on the type of the Machinery Parts.[10]

---

[9] The Functional Parts are processed by the Functional Parts Manufacturing Section (currently the Functional Parts Department).

[10] The Functional Parts are inspected by the Screening Inspection Unit of the Functional Parts Manufacturing Section (currently the Functional Parts Department).

In addition, each manufacturing section[11] issues a written production order[12] at the Niigata Plant for each process number prior to the beginning of mass production. At DM, the process number is assigned to a divided lot of products within the same lot, and division criteria are decided on a product-by-product basis based on their handling number.[13] The process number is comprised of ten digits (e.g., "E12345 0100" etc.), which indicates the following: the letter at the beginning shows a production category (showing either mass produced items or spot items, etc.); for the nine numbers, the next five numbers are serial numbers of production order indicating continuous production through sizing processes with the same conditions (i.e. products with the same production instruction series number are from the same lot); the first two digits out of the final four digits number is the divided lot number where the same lot has been divided; and the remaining two digits designates a divided lot number where the lot has been further divided. For example, the first lot is assigned "0100,"[14] and the second lot and the succeeding lot are assigned "0200," "0300," and so on. Occasionally, the lot number "0100" is divided into subdividing numbers like "0101" and "0102," but the number "0100" is displayed if it is not split.

(3) Inspection process and shipment

A Types of inspection and the flow until shipment

The Niigata Plant conducts three types of inspections comprised of an acceptance inspection, an in-process inspection and the final inspection. An acceptance inspection inspects raw materials (including purchased goods and supplied goods; hereinafter the same). An in-process inspection inspects intermediate products that have not completed all of the production processes, and this inspection is conducted at each production process. The final inspection inspects the final products after all of the production processes. Details of each inspection are described in B below.

Once final inspection has been completed (the details of which are as described below in B(c)), the product is packed and shipped to distributors and customers, etc.

---

[11] The Functional Parts Manufacturing Section (currently the Functional Parts Department) issues the written production order for Functional Parts.

[12] The written production order is an operational instruction document used for producing products containing a product number, a process number, a number of production instruction and sequences of the process, etc. and issued for each of the process number. The staff operates pursuant to the production order and fills in the actual performance.

[13] Because not all products from a same lot can be moved within the plant at once, the lot is split in accordance with the prescribed handling protocols.

[14] It is called "100 process number" at DM.

B Explanation about details of inspection

(a) Acceptance inspection

The inspection items and contents vary with raw materials.

Specifically, ①acceptance inspection is conducted by the accepting section using an operation standard set forth by that section for any materials other than OEM products[15] and those processed outside, ② for OEM products, the Niigata Quality Control Section conducts inspection and inspection items and specifics are specified in a written inspection standard, etc. set forth by the Quality Assurance Department, and ③ for materials that have their processing outsourced, the outside contractors conduct inspection pursuant to a written outsourced inspection standard for contractors that was approved by the Quality Assurance Section. When materials processed outside are shipped into the Niigata Plant, the on-site supervisor for the next process after outside processing checks whether the outside processing process has been completed, based on the written production order and by visually checking the actual products.

(b) In-process inspection

The in-process inspection is conducted after the completion of each production process from powder mixing, compacting, sintering, sizing, and after-treatment (except for machine processing that is outsourced). The inspection items and contents of the in-process inspection are determined by a process specification sheet or an operational standard, etc. set forth by each department.

After the completion of each production process, an employee in charge of each of the production process in the Manufacturing Section conducts voluntary in-process inspection for each inspection item in a process specification sheet in accordance with pre-determined standards and conditions. The result of the voluntary inspections at each production stage is recorded in a voluntary inspection data sheet.

(c) Final inspection

At the final inspection, a sampling check measuring dimensions and physical characteristics, etc. of products and documentation review are conducted.

The scope, frequency, items, etc. of the inspection depends on agreements with customers, but in principal it is conducted based on the ways described here. An employee in charge of the final inspection picks up certain samples from the first divided lot[16] that are provided for the final inspection out of the same production instruction series, and then inspects their dimensions and physical characteristics, etc. for each inspection item

---

[15] OEM products mean DM's products that are produced in other companies based on an outsourcing contract with DM.

[16] They are frequently "100 process number" divided lots, though the sequence of the divided lots varies depending on the process of outsourced machine processing, etc.

set forth in an inspection standard, in accordance with pre-determined standards and conditions,[17] and records the result into an inspection report. Other divided lots within the same production instruction series usually do not face the sampling check but only the document check described below.

At the document check, an employee in charge of the final inspection checks the completion of every process up until the final inspection required by a written production order as well as contents of the voluntary inspection data sheet and the outsourced inspection report[18] attached to the written production order that contains in-process inspection results of each production section. In case a defect report in a production stage and/or outsourced machine processing stage is attached, the employee will confirm what kind of measures is taken up until the final inspection process. If Non-Conformance is found, the employee checks whether a concession application document is attached or not (see 4(2) below for an explanation of "concession"). In addition, the employee confirms, regarding the product, whether a technical reporting document is issued or not, completion and the result of a treatment instructed by the technical reporting, whether a card showing that the product is the initial product of mass production is attached or not and a treatment based on the card, whether the number (number of containers) written in a written production order and that (number of containers) of the actual products are the same or not, any difference in actual products and the absence of abnormal appearance.

It is believed that DM and its customer agreed that the sample check is to be conducted before the shipment pursuant to the pre-determined conditions, as a representative sample of a QC process chart agreed between DM and its customer that we received showed that the sample check for dimensions and physical characteristics is a process to be conducted prior to the shipment.

However, the only explicit provision requiring a "final inspection" before shipment in DM's internal rules regarding inspections is the aforementioned document check, and there was no requirement to perform the sample check described above prior to shipment. In fact, at the Niigata Plant, with regard to the shipment of each production instruction divided lot, including the first divided lot for which the sampling check above is conducted, passing certificates were issued based on the document check above only and were regarded as eligible for shipping. On the other hand, as described in Section 4.2 (1) below, it has become the normal practice that either the sampling check above is conducted after the shipment or no such check is conducted.

In this report, unless otherwise specified, "final inspection" means the sampling check referred to above, though this wording is differently used in DM's internal rules regarding inspections.

---

[17] The inspection items and standards, etc. of the final inspection are different from those in the acceptance inspection and the in-process inspection. Generally speaking, the inspection items of the final inspection are more than those of the in-process inspection, and standards applicable to dimensions and physical characteristics may vary because of the difference in shapes and properties of products at each stage of post-forming, post-sintering and post-completion of machine processing.

[18] Outsourced inspection reports contain the results of inspections conducted by outsourcing providers.

4 Operational flow when Non-Conforming Products are produced

(1) Measures taken when Non-Conforming Products are found in acceptance inspection

If Non-Conforming Products are found in the acceptance inspection and those are judged to be usable for raw materials, a department using the raw material decides how to treat those. Otherwise, raw materials are to be returned to the supplier.

(2) Measures taken when Non-Conforming Products are found in in-process inspection

If Non-Conforming Products are found in the in-process inspection, DM's internal rules regarding the handling of defects govern the measures taken.[19]

Specifically, after the finding of Non-Conforming Products in the in-process inspection, a production of the products is immediately suspended and they cannot move to the next production process.

There are four possible measures to be taken for Non-Conforming Products, which are "reproduction," "modification," "concession," and "selection." Reproduction means disposing of the products and producing alternatives based on the judgment that there is no prospect of recovery. Modification means turning the products into conforming products by modifying them. Concession means applying to customers for their approval for concession. Selection means sorting out conforming products by inspecting all of the products.

When Non-Conforming Products are found in the in-process inspection, a prescribed defect report[20] is prepared by the employee in charge of inspections and the incident is reported to the Section Chief supervising such employee or other relevant superior. The concerned Section Chief, etc. decides the measures to be taken out of those described above depending on the details and degree of Non-Conformance. If the Section Chief, etc. is not able to decide the measure to be taken based on his or her sole judgment such as when a judgment on highly technical issue is required, he or she defers to the judgment of the responsible employee in the Technical Unit of each manufacturing section. The Section Chief, etc. or the employee obtains an approval on the decided measure from the manager of the section in charge of the product or certain deputies after

[19] The internal rules regarding the handling of defects stipulate different measures depending on a degree of defect. If a "major defect" such as a crack, etc. is found in a product, measures including an immediate report to the Quality Assurance Department are required. On the other hand, Non-Conformance that does not meet the customer specifications does not quality as a "major defect," so measures described in the main text is enough.

[20] The defect report is issued and attached for each process number of products.

deciding the measure.[21] Afterwards, the Manager of the Niigata Quality Assurance Section endorses the measure finally.

(3) Measures taken when Non-Conforming Products are detected in the final inspection

The operational flow for Non-Conforming Products found in the final inspection is basically the same as the case of the in-process inspection described in (2) above, based on the internal rules regarding the handling of defects. On the other hand, if it is found that products out of which Non-Conforming Products are found are shipped already, necessary measures are decided after the Quality Assurance Department promptly informs addressees of the shipment (agent, customers, etc.) in writing such as an email, etc.

Possible measures are the same as described in (2) above, divided into four categories including reproduction, modification, concession, and selection.

Section 4 Misconduct Relating to Quality Control at the Niigata Plant Discovered as a Result of the Investigation

1 Circumstances leading to the discovery of First Discovered Incidents

In February 2015, there was a whistleblowing from an employee of DM to MMC's Internal Contact Office pointing out that unpaid overtime work was occurring and that the production sites indicated for products were different from the actual production sites. In response to this, MMC's Internal Contact Office received explanation from the President before the former President of DM, who was the president at the time, confirmed how DM would treat this incident, and responded to the whistleblowing based on such information. In July 2015, the whistleblower pointed out that these incidents had not been corrected yet, and in March 2016, that the former issue had not been corrected and the latter issue had increased. Therefore, the office conducted an investigation on those incidents. As a result, it was confirmed that indicated production sites of products were different from the actual production sites in DM, so MMC decided to conduct a detailed investigation in July 2016 and initiated such investigation from August 2016. In September 2016, an internal investigation committee including external experts was established, and an investigation by the committee was started. The investigation continued to March 2017.

[21] When the department finding Non-Conformance in the in-process inspection (finding department) is different from the department in charge of inspecting Non-Conformance (responsible department), an employee responsible for inspection in the finding department drafts a defect report and the incident is reported to the Section Chief, etc. in charge in the finding department. Afterwards, the incident is reported to the Section Chief, etc. of the responsible department from the Section Chief, etc. of the finding department, and the Section Chief, etc. of the responsible department decides the measure.

As a result of the investigation of the committee, it was discovered that misconduct classified into the following categories were conducted (First Discovered Incidents).

(i) Misconduct related to the final inspection (omission of the final inspection, conducting final inspection after shipment, neglecting release of Non-Conforming Products, rewriting of inspection reports)
(ii) Process change without customers' approval
(iii) Omitting of the magnetic flaw detection inspection process

2 Details of misconduct discovered at the investigation on First Discovered Incidents

(1) Misconduct related to the final inspection (omission of the final inspection, conducting final inspection after shipment, neglecting release of Non-Conforming Products, rewriting of inspection reports)

A Description of misconduct

(a) Omission of the final inspection

As described in Section 3.3(3)B(c) above, the final inspection is required to be conducted prior to shipment of products pursuant to a written inspection standard. Nevertheless, products were shipped without conducting the final inspection before shipment, and it became habitual for the final inspection not to be conducted even after the shipment.

Major situations of such omissions are categorized into ① omitting choosing samples and ② choosing samples but omitting the final inspection on these chosen samples.

(b) Conducting final inspection after shipment, neglecting release of Non-Conforming Products

At the Niigata Plant, products were delivered before the final inspection that must be conducted before shipment. When the final inspection after such shipment was conducted and discovered the Non-Conforming Products, normally, formal measures (e.g., preparing a defect report and recalling the Non-Conforming Products) had to be taken. However, at the judgment of the inspectors responsible for final inspections and/or the Inspection Unit Chief, in light of the track records, etc. of the shipment of the Non-Conforming Products, the formal measures (e.g., preparing the defect report and recalling the Non-Conforming Products) were not taken and the release of the Non-Conforming Products was neglected.

In the case above, when the defect report was not prepared only at the judgment of the inspectors responsible for final inspections and the Non-Conforming Products were released, there was a practice with regard to the Machinery Parts that the inspectors responsible for final inspections referred to the document called "the administration record for the final inspection" before such judgment. There might be cases where the administration record for the final inspection was attached to the written inspection standards, etc. of the products, which were kept by the Inspection Unit, and it recorded the dates when the Non-Conformance was discovered in the past, the items of the Non-Conformance, the actual measurement value, the name of the employee in charge in the Technology Unit who approved the shipment, etc. Although the Non-Conforming Products were discovered through the final inspection after the shipment, the inspectors responsible for final inspections neglect the release of the Non-Conforming Products without taking the formal measures (e.g., preparing the defect report and recalling the Non-Conforming Products) when the values of the Non-Conforming Products were within the actual measurement values in the administration record for the final inspection.

(c) Rewriting of inspection reports

At the Niigata Plant, there were some products for which the inspection report must be submitted regularly to the customer or for which the inspection report must be submitted to the customer at the customer's request under the contract with the customer. When the final inspection after the shipment discovered Non-Conforming Products with regard to the dimensions and the physical characteristics of the products, certain solutions were supposed to be taken, such as reporting the actual measurement values to the customers and obtaining concessions from the customers. However, the values in the inspection report for lots where the Non-Conforming Products were discovered were rewritten as if they had fallen within the customer specifications and then the inspection report was provided to the customers.

The inspectors responsible for final inspections in the Manufacturing Department at that time rewrote the actual results of inspection reports saved on a shared server, and the steps taken are as follows:

① At the instruction of the Inspection Unit Chief or as described in (b) above, the inspectors responsible for final inspections referred the administration record for the final inspection and then rewrote the values in the inspection report without preparing the defect report at his or her own discretion.

② After preparing the defect report and the discussion with the Quality Assurance Department, the inspectors responsible for final inspections decided the shipment was acceptable in light of the past track records and then rewrote the values in the inspection report.

③ After the discussion with the person in the Technology Unit of the manufacturing department, the inspectors responsible for final inspections decided the shipment was acceptable in light of the past similar track records and then rewrote the values in the inspection report. In some cases,

the inspectors responsible for final inspections prepared the defect report, but in other cases he or she did not.

B Circumstances and time of the commencement

Regarding the circumstances and time of the commencement of the omission of the final inspection, conducting final inspection after shipment, neglecting release of Non-Conforming Products, the following facts were revealed through interviews.

With regard to the Machinery Parts, until around 1980, sampling inspections for all divided lots were conducted for all products produced at the Niigata Plant. However, after that time sampling inspections for all divided lots were not carried out for some Machinery Parts.[22] In particular, regarding the initial products[23] of the mass produced Machinery Parts produced with sufficient process capacity, when the sampling inspection did not discover the Non-Conforming Products from them and the Non-Conforming Products were not found even after the sampling inspection for several tens lots of the products, the products were treated as "A rank products." For the A rank products, instead of the sampling inspection for all divided lots, the sampling inspection for limited products, such as only for divided lots that had the 100 process number, were conducted.[24] However, afterwards, although it is not clear when it began, even the sampling inspection for limited products began not to be conducted. In addition, for the Machinery Parts, from approximately 2014, the products were classified into the following classes: (Class A) products for which the customers requested the company to submit the inspection report or products that customers have complained about in the past, and all other products as "Class B." Based on this classification system, final inspections were implemented preferentially for Class A products rather than for Class B products, and therefore final inspections were frequently not conducted for class B products in particular.

On the other hand, as for the Functional Parts, among inspectors responsible for final inspections, one stated that the omission of the final inspection and neglecting the

---

[22] According to the results of the interview from a person in charge who knows the situation at that time, although he or she did not remember the reasons, etc., the sampling inspection for all divided lots could not be conducted due to the number of the personnel and capacity of the equipment and facilities of DM, in light of the reasons such as the increase of the orders for the products.

[23] According to DM's rules, "initial products" are defined as (i) new products, which are the products for which a new number is assigned, (ii) design-changed products, which are the products for which the assigned numbers are changed, (iii) the process-changed products, (iv) the remanufactured products that are not produced for more than two years (provided, if there is an instruction from a customer regarding the term, such instruction shall be followed) and (v) the mold-changed products, which are the products of which the dimensions, such as the nominal, are changed, the products of which the program of the mold modification was changed, the products that are changed by the renewal of the molds and by the stretch repair and the products the customer instructs specially.

[24] As for the Class A products, checks using the documents are conducted such as verification between the standard values in the process specification sheets and the actual measurement values in the voluntary inspection data sheets were conducted.

release of the Non-Conforming Products were conducted from around 1977, when that person joined DM.[25]

Regarding the circumstances and time of the commence of the rewriting of the inspection report, although the concrete circumstances and time were not revealed, according to the outcome of the interviews,[26] for Machinery Parts, in approximately 1977, there was an internal system in DM called "concession in the inspection." "Concessions in the inspection" differ from the "concessions" described above in Section 3.4(2) which were official measures for Non-Conforming Products (concessions where a concession application was submitted to the customer and the customer's approval for shipment was obtained). "Concessions in the inspection" was a system where the Non-Conforming Products were able to be delivered when the inspectors responsible for final inspections reported Non-Conformance which was discovered in the final inspection to the Manager of the Quality Assurance Section and the Manager concluded that customers could use the products without problems and approved the shipment of the products. At the latest, it can be considered that the inspection reports were rewritten when the "concessions in the inspection" began, because the values in the inspection reports needed to fall within those in the customer specifications, not within the actual measurement values, in order to deliver such products without the claim from customers.

In addition, with respect to the Functional Parts, at the latest, it can be guessed that the inspection reports began to be rewritten from approximately 1977 in order to prevent customers from realizing the release of the Non-Conforming Products, if the final inspection after the shipment and neglecting the release of the Non-Conforming Products began from approximately 1977.

C Awareness of management

According to the outcome of the investigation conducted for the First Discovered Incidents, it was found that some members of management were aware of the misconduct described in A(a) to (c) above, but because the First Discovered Incidents were discovered relatively soon after the former president (the "**Former President**") assumed the position of representative director and president in 2015, it cannot be ascertained that the Former President was aware of the possibility of misconduct existing.

(2) Other misconduct detected in the investigations on the First Discovered Incidents

According to the outcome of the investigations conducted when the First Discovered Incidents were found in addition to the misconduct described above in (1),

[25] The interviewee stated that he or she did not recognize that the final inspections were not implemented for the Functional Parts.

[26] Among the interviewees, there was one who stated that the inspection reports began to be rewritten from approximately 20 years ago.

misconduct was also discovered which involved process changes not approved by customers and omission of magnetic flaw detection inspection processes.

Process changes not approved by customers involved DM changing the process without customers' approval even though the company agreed with the customer that customer approval was required to change the process in the normal situation.[27]

The omission of the magnetic flaw detection inspection process involved the magnetic flaw detection inspection for a part of the products of Machinery Parts by the Producing Support Division in the Producing Division[28] at the time was conducted only by the sampling inspection or the magnetic flaw detection inspection was completely omitted when the products were delivered to the customers, even though the magnetic flaw detection inspection should have been conducted for all Machinery Parts.

3 The response after the discovery of the First Discovered Incidents

(1) Fact finding

As described in 1 above, the investigation on the First Discovered Incidents by the internal investigation committee was conducted from September 2016 to March 2017.

(2) Analysis of cause

DM analyzed the common causes of the First Discovered Incidents as described in 2(1) and (2) above, as well as the particular causes of each misconduct.

A Common causes of each issue in the First Discovered Incidents

As the cause in the First Discovered Incidents, it was pointed out that the management and employees of DM lacked the pride and the awareness as a member of the manufacturing industry and the MMC group, that they lacked the compliance awareness and morality, that the organization and structure of DM was insufficient and that the oversight of MMC was insufficient.

In addition, it was pointed out that the auditing structure of DM was insufficient and the internal whistleblower system (MMC's Internal Contact Office) did not function well so that the First Discovered Incidents were not found for a long period of time.

---

[27] In particular, the following cases were found: (i) the products were delivered to customers, pretending that the products were produced at the Niigata Plant, even though a part of or most of the production processes were transferred to foreign affiliated companies, (ii) the products were delivered to customers, pretending that the products were produced at the Niigata Plant, even though a part of or most of the production processes were transferred to the Fujioka Plant, (iii) the products were delivered to customers, pretending that the products were produced at the Niigata Plant, even though a part of or most parts of the production processes were outsourced to other companies in the same industry and (iv) outsourcing vendors for the machine processing were changed from the agreed outsourcing companies to other companies without the approval from customers.

[28] This is currently called the Material Performance Control Section of the Machinery Parts Manufacturing Department of the Production Division (see footnote 3 above).

B Cause of the misconduct concerning the final inspection (omission of the final inspection, conducting final inspection after shipment, neglecting release of Non-Conforming Products, rewriting of inspection reports)

As the cause of the misconduct concerning the final inspection, the following causes were pointed out: the acceptance of orders of the products that were difficult to manufacture in light of the products' specifications, the inactiveness of the quality improvement activities, insufficient capacity of the product inspection (e.g., the number of the personnel and testing equipment for the final inspection), insensitivity to the quality, the corporate cultural climate that put the deadline before the quality, and the failure in the checking function of the final inspection.

C Cause of process change without customers' approval

As the cause of the process change without customers' approval, the following causes were pointed out: the acceptance of orders of the products that were difficult to manufacture in light of the products' specifications, the lack of the mechanism for checking the progress of the process change and of the suspension of the shipment of the products for which the process was changed without customers' approval, and the lack of the understanding of the persons in charge of the rules regarding the process change.

D Cause of the omission of the magnetic flaw detecting inspection process

As the cause of the omission of the magnetic flaw detecting inspection process, the following causes were pointed out: the lack of ability of the products inspection (e.g., the number of personnel who conduct the magnetic flaw detecting inspection and inspection equipment) and insufficient time for inspection.

(3) Formulation and implementation of recurrence preventive measures

The following were the main recurrence preventive measures and were formulated and implemented based on the analysis of the causes described in (2) above.

A General recurrence preventive measures

(a) Recurrence preventive projects

With the aim of correcting the issues of DM's nature (corporate culture), personnel, facilities and equipment, and mechanisms cited above in (2), from around October 2016, DM rolled out company-wide recurrence preventive activities, launching the (i) corporate culture reform project, (ii) product yield improvement project, (iii) inspection process improvement project, and (iv) IT system project.

(i) The corporate culture reform project was launched with the aim of creating a quality-focused culture, and improving communication between employees and increasing job motivation, and sought to achieve this by means such as by holding

meetings between DM's executives and employees (management-level) from each division and assemblies of all employees, as well as conducting employee surveys.

(ii) The product yield improvement project was implemented with the aim of improving yield rates for products with the 57 product numbers that were found to have been Non-Conforming Products shipped to customers in the investigation when the First Discovered Incidents were discovered and which, at the request of customers, require 100% inspection screening of such Non-Conforming items, and sought to achieve this by studying and implementing improvement measures for each product.

(iii) The inspection process improvement project was implemented with the aim of augmenting inspection capacity, and sought to study measures for establishing and maintaining a final inspection system and establishing and maintaining a 100% inspection screening system, etc., and carried out augmentation of inspection personnel and facilities.

(iv) The IT system project was implemented with the aim of preventing the shipping of products that have not undergone process change procedures, and sought to convert the process change procedure system to an online system, and visualize the progress status of process change processing.

(b) Reorganization

After discovery of the First Discovered Incidents, DM reorganized its structure to enhance its inspection framework and improve productivity. With the aim of establishing a mechanism to ensure that final inspections would be performed effectively, as of October 1, 2016, DM newly established the Niigata Quality Control Section under the Quality Assurance Department, transferred and consolidated final inspection functions, which had formerly been the located in manufacturing departments (Production Division), to quality assurance departments. As of April 1, 2017, DM also changed the Board of Directors to the new structure, and four directors were replaced. Additionally, as of May 1, 2017, DM put in place mechanisms to ensure that the issues did not reoccur, by newly establishing the Quality Assurance Division, structuring its organization so that the Quality Assurance Department was under the direct management of the Quality Assurance Division, taking public relations measures to show that the quality assurance framework had been strengthened, and appointing a full time director as the General Manager of the Quality Assurance Division.

(c) Ensuring production capacity

In order to reduce the risk of quality problems reoccurring and to reform business operations, on July 25, 2017, DM's Board of Directors approved the DM Management Reorganization Measures, which were a plan for initiatives to renew old facilities and equipment and automate the production process, etc. On the following day, July 26, 2017, MMC's Board of Directors gave approval for support for the DM Management Reorganization Measures.

DM established the Re Project Promotion Office in September 2017 to facilitate "ensuring production capacity" through capital expenditure in DM, which was one of the aims of the reorganization plan. The Re Project Promotion Office comprised seven teams:

the Product Transfer Team, In-House Processing Transfer Team, Construction and Equipment Team, Guangdong Equipment Team, Personnel Appointment Team, Productivity Improvement Team, and Inspection Capacity Team. These teams shared information with one another while acting to realize the goal of "ensuring production capacity" for DM.

In order to facilitate "ensuring production capacity" through capital expenditure in accordance with the plan and improve productivity and yield rates, DM approved approximately 3.6 billion yen of capital expenditure for the Niigata Plant and Fujioka Plant. Thanks to this capital expenditure, state of the art facilities and equipment were installed at the Fujioka Plant, which had further potential for expansion, and the production of some products was transferred from the Niigata Plant to the Fujioka Plant. In addition, automatic inspection equipment such as magnetic flaw detection inspection and visual inspection equipment was installed at the Niigata Plant to automate the inspection process, etc. and improve productivity.

B Recurrence preventive measures against final inspection-related misconduct (omission of the final inspections, conducting final inspection after shipment, neglecting release of Non-Conforming Products, rewriting of inspection reports)

As recurrence preventive measures targeting final inspection-related misconduct, firstly, of the 257 product numbers for Non-Conforming Products picked up from the inspection reports for the period from February 2016 to September 2016 when investigating the First Discovered Incidents, a product yield improvement project is underway for the 57 products that customers identified as requiring 100% inspection screening, and DM aimed to end 100% inspection screening quickly.

From October 2016, the number of inspectors engaged in final inspection was increased from just under 30 to just over 60, and 3D measurement equipment, etc. was installed. At the same time, DM implemented inspection level checks by a third-party organization in order to improve the skills of inspectors engaged in final inspections.

DM also implemented internal education initiatives relating to final inspection, such as familiarizing all employees with the importance of various inspections such as in-process inspections and final inspections.

Please note that between October 2016 and December 2017 MMC conducted monthly quality audits of the in-process inspections and final inspections at DM.

C Recurrence preventive measures against process changes without customer approval

The following measures were put in place as recurrence preventive measures targeting process changes not approved by customers. First, in order to perform sufficient confirmation of production capacity at DM, Production Capacity Adjustment Meetings have been held once a month since January 2017, and production capacity is now checked

periodically. DM now systematically renews and maintains aged facilities and equipment under the management of the Production Engineering Department.

Prior to discovery of the First Discovered Incidents, defects in the process change progress confirmation function and the loss of documents, etc. led to the shipment of products that had not undergone process change procedures. Therefore, an online system for managing the progress status of process changes was put into operation in April 2017 in order to prevent the loss of documents and allow the progress status to be viewed in real time. This system established a mechanism that prevents products from being shipped unless the General Manager, Quality Assurance Department grants approval for process changes requested using the system.

The Process Change Management Rules, which set forth the provisions relating to the process changes at DM, were revised as of December 20, 2017 such as by appending the Process Change Application Guidelines that clarified the rules regarding process change applications with respect to machine processing.

With respect to employees as well, not only did the executives explain to management-level personnel in relevant departments what issues for process changes without customer approval were in the First Discovered Incidents, they also familiarized all employees in relevant departments with the necessity of submitting process change applications, etc., and implemented education initiatives to ensure understanding of the process change rules.

D Recurrence preventive measures against omission of the magnetic flaw detection inspection process

The number of inspectors engaged in magnetic flaw detection inspection was increased and facilities and equipment were augmented, such as by establishing a new magnetic flaw detection inspection line, as recurrence preventive measures against magnetic flaw detection inspection omissions and to establish a framework that ensures that 100% of magnetic flaw detection inspections are performed.

4 Background leading to discovery of the Later Discovered Incidents

As described in 3(3) above, DM implemented a range of recurrence preventive measures after discovery of the First Discovered Incidents. As part of these measures, DM increased its capacity to conduct final inspections for even more products than before discovery of the First Discovered Incidents, thanks to an increase in the personnel engaged in, and augmentation of the inspection facilities and equipment used for final inspections.

During the period from around October 2016 to around March 2017, this augmented inspection capacity resulted in the discovery that Non-Conforming Products had continued to be released even after the discovery of the First Discovered Incident, with respect to products other than the issues with the products in the investigation of the First Discovered Incidents cited in 2(1) or (2) above. In response to the situation, DM decided at that time to get an understanding of the circumstances of the release of Non-

Conforming Products and quickly resolve the issue, without reporting the issue to MMC and customers, and conducted a follow-up investigation of the final inspection results and a study of the causes and remedial measures regarding the production of Non-Conforming Products (see 5(3)C below for details).

While this was taking place, in January 2018 a report was submitted to MMC's internal hotline to the effect that the rewriting of inspection reports was continuing, so DM reported the facts of the issues such as the release of Non-Conforming Products (the Later Discovered Incidents) that it was aware of as of January 2018.

5 Misconduct in the Later Discovered Incidents

(1) Misconduct in the final inspection (omission of the final inspection, conducting final inspection after shipment, neglecting release of Non-Conforming Products, rewriting of inspection reports)

Description of misconduct

A Omission of the final inspection

As stated in 3(3) above, DM implemented the various remedial measures to prevent a recurrence after the First Discovered Incidents were found. One of the measures was to increase the number of personnel and inspection facilities for the final inspection, such that the final inspection was able to be implemented for more products than before the First Discovered Incidents was found. However, DM was not able to significantly improve the situation immediately, and thus there were still lots from which only samples were taken but for which no inspections were conducted.

In addition, new matters were discovered during the process of investigation of the Later Discovered Incidents. Among the special alloy products manufactured by the Special Alloy Unit of the Functional Parts Manufacturing Section at the Niigata Plant, it was discovered that there was no final inspector for valve seats and soft magnetic products, and final inspections were not being conducted. During that time, the decision to ship valve seats and soft magnetic products was made by the personnel in charge of the manufacturing of these products in the Functional Parts Manufacturing Section (currently the Functional Parts Department).

B Conducting final inspection after shipment and neglecting release of Non-Conforming Products

In response to the discovery of the First Discovered Incidents, as described in 3(3) above, DM took measures to enhance the execution rate of the final inspection for the Machinery Parts and shorten the period between the shipment of the products and the final inspection as much as possible. However, DM took few measures to aim at conducting the final inspection before shipment and thus the final inspection for the Machinery Parts which are produced at the Niigata Plant was still not conducted before shipment even after the discovery of the First Discovered Incidents. In addition, as

described in 5(3) below, most of the problematic products that were Non-Conforming Products in the First Discovered Incidents were Machinery Parts, and therefore measures with respect to Machinery Parts were prioritized. Regarding the Functional Parts, the remedial measures in light of the First Discovered Incidents were not taken in the first place and therefore the final inspection for the Functional Parts produced at the Niigata Plant was not being conducted before shipment even after the discovery of the First Discovered Incidents.

Because, as described above, at the Niigata Plant, the final inspection was not conducted before shipment even after the discovery of the First Discovered Incidents, the timing of discovery of Non-Conforming Products was also after shipment. When the Non-Conforming Products were discovered in the final inspection, as stated in Section 3.4(2) and (3), a defect report was prepared by the inspectors responsible for final inspections, and when the Niigata Quality Assurance Section could not make a decision of the handling thereof, the personnel responsible in the Technical Unit of each Manufacturing Section made the decision. The personnel responsible in the Technical Unit sometimes took measures, such as recalling the shipped products when the products were stored in the premises of distributors. However, in the case where the products were already delivered to customers, the Technical Unit took measures like consulting with the person in charge in the Niigata Quality Assurance Section, but did not take measures such as recalling the products, except in the case of products of which the degree of Non-Conformance was large.[29] As a result, the release of Non-Conforming Products continued.

C Rewriting of inspection reports

After the First Discovered Incidents were found, around October or November 2016, the Manager of the Niigata Quality Control Section instructed the inspectors responsible for final inspections that, from then on, the defect report must always be prepared when Non-Conforming Products are discovered in the final inspection and the inspection reports must not be rewritten. Therefore, regarding the Machinery Parts, the inspectors responsible for final inspections never rewrote the inspection reports by his or her own decision. However, because the release of the Non-Conforming Products continued as described in B above, both the Manager and the Deputy Manager of the Niigata Quality Control Section at that time instructed the inspectors responsible for final inspections that, when Non-Conforming Products were discovered in the final inspection, it must be reported to the aforementioned Manager and the Deputy Manager. Then, only by themselves, the Manager and the Deputy Manager rewrote the inspection reports regarding the Machinery Parts with regard to which there was report of discovery of Non-Conforming Products, except the products for which the degree of Non-Conformance was large.[30] With respect to the scope of rewriting inspection reports, the Manager and the Deputy Manager rewrote the inspection reports not only for the products for which

[29] Some interviewees stated that the products that were delivered to the customers might be recalled in case the degree of Non-Conformance was large, but they also stated that the frequency of such retrieval was low.

[30] As the Manager of the Niigata Quality Control Section, he or she did not want to involve the person responsible for final inspections into rewriting the inspection reports. Therefore, the Manager and the Deputy Manager of the Niigata Quality Control Section rewrote the inspection reports only by themselves.

customers periodically request the inspection reports, but also for the other products, in case DM was asked to submit the inspection reports.

On the other hand, regarding the Functional Parts, the Chief of the Functional Part Inspection Unit of the Niigata Quality Control Section continued rewriting the inspection reports and did not prepare the defect reports at his or her own discretion, despite the directions described above, even after discovery of the First Discovered Incidents.

In addition, new matters were discovered during the process of investigation of the Later Discovered Incidents. Among the Functional Parts manufactured by the Functional Parts Manufacturing Section (currently the Functional Parts Department), although confirmation[31] of physical characteristics included in the final inspection items was carried out, the Functional Parts Manufacturing Section would enter the measurement results for those physical characteristics into the inspection report for final inspection so that they satisfied customer standards if the actual results did not satisfy the customer standards.

(2) Circumstances and time of the commencement

The circumstances and time of commencing of the omission of the final inspection before shipment, implementing the final inspection after shipment and neglect of the release of the Non-Conforming Products were described in 2(1)B above. The failure to conduct final inspections for valve seats and soft magnetic products began around June 2007 when the Special Alloy Section, which had been in charge of valve seat and soft magnetic product manufacturing and inspection until that point, was integrated with the Sintered Bearing Manufacturing Section, Niigata Plant, and became the Bearing and Special Alloy Parts Manufacturing Department. At that time, DM ceased to appoint an inspector to conduct final inspections of valve seats and soft magnetic products, and ceased to conduct final inspections of valve seats and soft magnetic products.

The background leading to, and commencement date of, the rewriting of inspection reports is as described in 2(1)B above, but discovery of the First Discovered Incidents led to DM putting an end to rewriting by the inspectors responsible for final inspections. However, as described in (1)C above, the rewriting of inspection reports by the Manager and the Deputy Manager came to be carried out after discovery of the First Discovered Incidents. According to interviews conducted, the rewriting of inspection reports for some Functional Parts by the Functional Parts Manufacturing Section (currently the Functional Parts Department) was carried out from around 2013 at the latest.

(3) Circumstances surrounding the continuance of misconduct even after the discovery of the First Discovered Incidents

As described in 3(3), driven by the discovery of the First Discovered Incidents, various recurrence preventive measures were taken, including that when the release of

[31] Until around December 2017, inspection of such physical characteristics was outsourced, and the Functional Parts Manufacturing Section (currently Functional Parts Department) would check the measurement results from the subcontractor and enter them in the inspection report for the final inspection.

the Non-Conforming Products was discovered, the shipment of such products was suspended and the 100% inspection screening for the products was implemented. Therefore, regarding the products that were regarded to be at issue in the First Discovered Incidents, the issue of release of the Non-Conforming Products was improved and resolved. DM therefore explained to MMC and DM's customers that the release of the Non-Conforming Products was prevented.

On the other hand, the remedial measures for the final inspection were also taken as one of the remedial measures taken against the First Discovered Incidents. However, the main goal of such remedial measures was not to conduct the final inspection before the shipment of the product per se, but was also intended to decrease the amount of required time for the final inspection in addition to eliminating the omission of final inspection. In addition, the increased personnel and equipment were invested with a focus on things other than the final inspection for general mass-produced products, such as the inspection for the initial parts with a process change and the release from the 100% inspection screening duty requested from certain customers due to the outcome of the First Discovered Incidents. Thus, the remedial measures for implementing the final inspection before shipment continued to be insufficient.

In such circumstances, as stated in (4) below in detail, the Manager of the Niigata Quality Control Section recognized around October 2016 that in DM, the release of the Non-Conforming Products existed with respect to the products other than those regarded as being at issue and reported it to the Former President around November or December 2016. By approximately January 2017, directors and other managements other than the Former President at that time also recognized the release of the Non-Conforming Products.

However, according to the Former President, at that time, DM was very busy with the responses to the First Discovered Incidents, including the temporary response for preventing the shipment of Non-Conforming Products and the customer responses, because it was just after the discovery of the First Discovered Incidents. Therefore, although he knew of the release of the Non-Conforming Products in relation to the products other than those regarded as being at issue, he did not think that DM had the remaining capacity to take measures for the issues after investigating and recognizing the actual condition of the issues. Therefore, the responses to the First Discovered Incidents were prioritized. Moreover, according to the Former President, DM needed a capital increase from MMC in order to continue its business due to DM's liabilities exceeding its assets temporarily in March 2017. One of the conditions for such capital increase was to decide on a plan of remedial measures to prevent the recurrence of the First Discovered Incidents by clarifying the cause of the First Discovered Incidents. Therefore, the Former President thought that it was better not to disclose to MMC the fact that the final inspection after shipment and neglecting the release of the Non-Conforming Products and rewriting the inspection reports were continuing. He gave an instruction to conceal the documents, etc. in relation to the release of the Non-Conforming Products in March 2017, when the audit by the Internal Audit Department of MMC was conducted, and May 2017, when the general compliance inspection by MMC was conducted.

After that, in April 2017, a person was seconded from MMC to DM, who was appointed as a new Director and new General Manager of the Quality Assurance Division (the "**General Manger of the Quality Assurance Division**") of DM. In the later part of

May 2017, when conducting interviews as a part of the general compliance inspection, he heard from the Manager of the Niigata Quality Control Section that the release of the Non-Conforming Products continued. On May 25, 2017, he made a report in a meeting attended by all full-time directors, etc., including the Former President, that the release of the Non-Conforming Products was continuing and that the values in the inspection reports that must be submitted regularly to the customers were also being rewritten in connection with such release. At the same time, he also asked whether or not the issues should be reported to MMC and DM's customers. However, the Former President did not think that it should be disclosed to MMC. He also thought that it would bother the customers when it was reported to the customers since the response to the customers by the whole DM would lead to stoppage of the production line. On the other hand, the Former President thought, as a part of the remedial measures for the First Discovered Incidents, that the various measures including reinforcing the equipment and facilities at the Niigata Plant and Fujioka Plant would decrease the frequency of occurrence of the Non-Conforming Products, and in the future improve the situation regarding the release of the Non-Conforming Products and rewriting of the inspection reports associated therewith. Therefore, the Former President stated his opinion that it was a technological issue that many Non-Conforming Products were being generated, that it was difficult to immediately improve such situation because there was a large number of cases, that it would therefore be futile to report such issue to MMC, and that what DM must do is to eliminate the Non-Conforming Products which would be the best way for the company. The other full-time directors in attendance did not make explicit objections against the Former President's opinion.[32] Therefore, DM decided not to report to MMC and to the customers the fact that, even after the First Discovered Incidents were found, the final inspection was conducted after shipment and that the release of the Non-Conforming Products and rewriting of the inspection report continued. DM aimed instead for the resolution of the misconduct through the improvement of the quality of the Non-Conforming Products.

As a part of such decision, at that time, a project called the Quality Improvement Project, which consisted of the General Managers of each department and each office, was established. Then, the project played the central part in preparing a list of products to be improved by picking up the products for which the final inspection discovered Non-Conforming Products after January 2017. During the period from approximately May 2017 to approximately January 2018, a meeting was held about once every other week, where the members of the project gathered and improved the Non-Conformance one-by-one with reference to the list.

On the other hand, because most of the problematic products that were Non-Conforming Products in the Earlier Discovered Incidents were Machinery Parts, DM prioritized measures targeting Machinery Parts after discovery of the Earlier Discovered Incidents. Therefore, DM put increasing the number of final inspection inspectors for

[32] The full time directors who were appointed newly in April 2017 stated in the interviews that they could not oppose the policy of the Former President because there was no prospect that the frequency of the occurrence of the Non-Conforming Products would improve even if they reported it to MMC and the customers, and they were afraid that DM would have faced the crisis if they had disclosed it and if they had reported the misconduct to MMC, and the customers DM would have needed to use a lot of energy for the response to the customer after that, and there would have been the possibility that it stopped the customers' line.

Functional Parts on the back burner, which led to only a small increase in the number of inspectors for final inspections of Functional Parts, resulting in the shipment of valve seat and soft magnetic products without conducting final inspections, even after discovery of the First Discovered Incidents.

(4) Awareness of management

As described in 3(3) above, DM took few measures to aim at conducting final inspection before shipment even after the discovery of the First Discovered Incidents. Therefore, as described in (1)A above, the final inspection for many products manufactured in the Niigata Plant was conducted after shipment. Thus, since the discovery of the First Discovered Incidents, the Former President and the Director and the General Manager of the Production Division ("**General Manager of the Production Division**") were aware that the final inspection after shipment continued even after the discovery of the First Discovered Incidents.[33]

Regarding the fact that the release of the Non-Conforming Products and rewriting of the inspection report continued, the Former President became aware of it around November or December 2016 from the report by the Manager of the Niigata Quality Control Section.

In addition, at the latest by around January 2017, the General Manager of the Production Division received the report from the Manager of the Niigata Quality Control Section that the release of the Non-Conforming Products and rewriting of the inspection report continued, and they thus became aware of these facts.

It was thought that, as of January 2017, when the Manager of the Niigata Quality Control Section reported to the full-time directors the fact that the release of the Non-Conforming Products continued, the former Managing Director and former Director and General Manager of the Sales & Marketing Division recognized such fact.

In addition, the General Manager of the Quality Assurance Division became aware that the release of the Non-Conforming Products and rewriting of the inspection reports continued based on the report by the Manager of the Niigata Quality Control Section as of May 2017. Moreover, the Director and General Manager of the Production Engineering Division were aware that the release of the Non-Conforming Products and rewriting of the inspection report continued based on the report by the General Manager of the Quality Assurance Division as of May 2017.

---

[33] On the other hand, the Former President and the General Manager of the Production Division stated that they did not have a clear awareness that final inspections continued to be omitted even after discovery of the First Discovered Incidents.

Section 5 The Root Causes and Background

1 Background

(1) DM's Financial Situation

MMC's sintered products business had the largest share in the domestic market until around 1990, but receded to around third place in the domestic market in the 2000's. In 2005, MMC separated its sintered products business and, with Plansee, jointly funded and incorporated MMPMG, as the precursor of DM. While the business increased its overseas manufacturing bases, deficits continued, and in 2009, four years after the incorporation, the joint venture with Plansee was terminated and DM became a wholly owned subsidiary of MMC. Upon this, the manufacturing bases in the United States and China were assigned to Plansee, leaving DM with no overseas manufacturing bases except for its Malaysian base, and DM's international operations lagged behind its competitors. After that, although DM sometimes achieved surpluses, it was only a few hundred million yen, and thereafter DM sometimes fell into the red again. In order to expand its international operations again, DM established manufacturing facilities in China in 2012 and Indonesia in 2014, and dedicated all of its investment in human resources and capital expenditure to its international manufacturing facilities. Given such operating environment and results, personnel and facility investments in the Niigata Plant were minimized. In particular, manufacturing facilities and equipment deteriorated and became obsolete because keeping costs down was prioritized and renewals were postponed to the as much as possible with respect to renewals of manufacturing facilities and equipment that did not result in production increases. For example, 80% or more of the equipment, such as the press machine used in DM, were used 30 years or more without being replaced.

As described above, personnel and facility investments were inhibited at DM in the past, but on the other hand, production volume increased year-by-year. The cause of such production increase was the increase in demand for DM products by DM's customers, due to factors such as the increase in automobile production by automobile manufacturers, the major supply destination of DM products. At DM, in general, customers' orders were not rejected, even if they exceeded DM's production capacity, because it was necessary to ensure profit by increasing production volume, and also DM did not want to cause trouble to its customers by rejecting their order (there were only a few sintered product manufacturers who could substitute DM and supply products).

(2) Positioning of inspection departments at DM

At the Niigata Plant, the inspection departments were formerly under the quality assurance departments but transferred to the manufacturing departments around 1988, and then transferred back to the quality assurance departments around 2004 but transferred once again to the manufacturing departments in 2007. Thereafter, the First Discovered Incidents were discovered, and as one of the recurrence preventive measures, in October 2016, the inspection departments were again transferred to the quality assurance departments to ensure independence of the inspection departments. However,

as stated above, the inspection departments were one of the organizations under the manufacturing departments for a long time.

Multiple personnel pointed out that, because at DM, attracting new orders and increasing production were considered important, and together with the fact that the inspection departments were positioned under the manufacturing departments, the inspection departments were perceived as departments that "would not generate money" by personnel from other departments, and compared to the development and manufacturing departments, their status in the company was considered low.

As described above, at DM, the inspection departments were perceived as departments that would not generate additional value and their status was considered lower than the other departments.

2. Cause analysis common in the First Discovered Incidents and Later Discovered Incidents

(1) Order intake and mass production of specifications that exceeded its process capacity

As customers' products became more advanced, specifications of products DM was requested for became more complex. However, because personnel investment was minimal, as described in 1(1) above, in DM's R&D departments, only technicians themselves had the knowledge that would enable the discussion of product specifications with customers on even ground. Therefore, upon accepting orders for products from customers, the R&D departments were not able to negotiate specifications with customers based on DM's process capacity, and as a result DM had been accepting orders with specifications that exceeded DM's process capacity.

In addition, mass production should have been commenced only after problems such as the Non-Conformance detected at the inspection of prototypes (samples) were corrected before mass production upon examination by the relevant departments during each step of the DR described in Section 3.3(1)C above. However, in reality, for example, even though the personnel in charge of samples were aware that the specification actually exceeded DM's process capacity as a result of sample testing during DR1 of the sample production process, such personnel gave an evaluation to the effect that it was possible to meet the specification, due to pressures from the sales departments. In addition, multiple personnel in management, R&D departments, and quality assurance departments stated that there were cases where they were faced by the deadline for commencing mass production without completing correction of the items pointed out by relevant departments as requiring improvement during the DR3 of the transition phase to mass production, because the time requested by the customers to commence mass production was approaching soon. As such, in reality, DR was reduced to mere formality and it must be pointed out that it did not yield expected outcomes, i.e., preventing development and mass production of the Non-Conforming Products.

As a result of the above, the Non-Conforming Products occurred frequently when mass production of products that were overreached at the order intake phase commenced.

(2) Process capacity to manufacture products that satisfied customer specifications deteriorated

As described in 1(1) above, at DM, cost suppression was prioritized and renewals of manufacturing facilities and equipment were postponed to the extent possible with respect to manufacturing facility and equipment renewals that did not result in production increase and as a result, facilities deteriorated and became obsolete. Thus, despite any attempt to improve quality during the manufacturing process after the commencement of mass production of products that were overreached at the order intake phase as described in (1) above, due to the deterioration of the process capacity to manufacture products that satisfied customer specifications, DM was in a situation where it was incapable of improving quality.

As a result, additional costs caused by the frequent occurrence of the Non-Conforming Products resulted in further worsening of business results. At DM, as a measure against the worsening business results, as described above, customers' requests such as new order intakes and increased production were not rejected despite the fact that they exceeded the production capacity, and the efforts were made to secure profits by operating the manufacturing facilities and personnel in excess of their production capacity. Under such situation, sufficient facility improvement was not possible despite any attempt to renew the manufacturing facilities because manufacturing lines could not be stopped.

In addition, while there was the Technical Unit under the Manufacturing Section as the department responsible for quality improvement of products, personnel in such Technical Unit were only a few in each Manufacturing Section because personnel investments were inhibited as described in 1(1) above. Moreover, due to the deterioration of process capacity, a considerable number of defect reports were issued every day with respect to matters such as detection of the Non-Conforming Products in each process,[34] and the personnel of the technical teams in each Manufacturing Section had to handle the large amount of defect reports. When the Non-Conforming Products were detected in the manufacturing processes, etc. most of the time it was handled on an ad hoc basis by removing the Non-Conforming Products through 100% inspection screening and then sending the conforming products to the next process, and investigations on the root cause of the Non-Conforming Products and consideration and implementation of remedial measures were not undertaken.

As explained above, DM was in a vicious cycle whereby it accepted orders that exceeded its production capacity in order to maintain profit without being able to improve quality even after transiting to the mass production stage, which resulted in producing even more Non-Conforming Products.

[34] For example, the monthly average number of defect reports issued for the entire Niigata Plant was 1,254 in the fiscal year 2014, 1,033 in the fiscal year 2015, 1,367 in the fiscal year 2016 and 1,649 between April and December 2017.

(3) Quality assurance framework was deficient

At DM, it was common that products needed to be immediately shipped on the day on which it came for final inspection in order to meet customers' delivery date because the time to be allocated for final inspections was totally disregarded when processes were planned.[35] Thus, it was almost impossible to conduct final inspections before shipment under the process plans.

In addition to the actual situation above, final inspections of dimensions and physical characteristics before the shipping were not required under the internal rules regarding final inspections and internal system regarding shipping management. Thus, DM's employees, including the inspectors responsible for final inspections, lacked awareness as to the necessity of conducting final inspections before shipping despite the fact that the final inspections before shipping were contractually agreed with customers, and the understanding that it would be sufficient to conduct inspections on certain pre-selected samples, prepare inspection reports and send them to customers only in situations such as where the customers' requested submission of inspection reports was prevalent.

In addition, among DM's employees involved in final inspections, some stated that DM's criteria for shipping approval was in-process assurance, and DM's quality assurance framework was premised on the fact that "finished products should be conforming products if, in each manufacturing processes such as molding and sintering, such manufacturing processes were conducted appropriately and the results were assured during in-process inspections." However, such recognition lacked reason because in reality, the process capacity to manufacture conforming products had deteriorated as described above. In addition, among the inspection items in the final inspections, some were not included in the in-process inspections during the manufacturing phase, and thus, there were cases where Non-Conformance to such inspection items was detected for the first time during the final inspections. There were also cases where the standards set in each in-process inspection during stage of the manufacturing process were lenient and at the end of the manufacturing process, the customer specification tolerances were exceeded. Furthermore, there were cases where processes were conducted without conducting in-process inspections with regard to certain inspection items although such inspection items were subject to in-process inspection under the internal rules.

As described above, under DM's quality assurance framework, final inspections of dimensions and physical characteristics before shipping were not a prerequisite. Therefore, products were already shipped or delivered to customers, or integrated into automobile parts at the time Non-Conforming Products were detected at the final inspections and thus difficult to recall.

---

[35] As described in Section 3.3(1)B above, process design is done by the person responsible for designing in the Machinery Parts R&D Section for the Machinery Parts and the person responsible for designing in the Functional Parts Section of the Production Division for Functional Parts. The scheduling of processes determined for each product is determined by the person responsible for process management in each manufacturing division (the Large Components Manufacturing Section, Small Components Manufacturing Section and Functional Parts Manufacturing Section (currently the Functional Parts Department)) of the production department.

(4) Insufficiency of manpower and equipment for inspection

As for the reason final inspections could not be conducted before shipment, some employees, especially people relating to the Inspection Unit, stated that there were absolutely not enough staff and equipment to implement the final inspection before shipment.

In addition to the staffing shortage, DM did not test and figure out how many employees were needed to implement the final inspection according to an agreement with customers because the final inspection was not implemented in many cases in the past.

Furthermore, as shown in 4.3(3)B above, DM implemented certain reinforcement measures in the inspection department after First Discovered Incidents were discovered, such as the increasing of contractual workers for the Inspection Unit of the Machinery Parts,[36] purchasing three-dimensional measuring machines for the Inspection Unit of the Machinery Parts, etc. These measures achieved certain results such as shortening the period between shipment and the final inspection, which was implemented after shipment.[37] However, there were still not enough staff and equipment to implement the final inspection before shipment and it was an insufficient state.

(5) Pressure of delivery date and pressure on the inspection departments from other departments

As shown in 1(2) above, the status of the inspection departments was lower than development and manufacturing departments in DM, and there was pressure on the inspection department from development and manufacturing departments. For example, an employee relating to the Inspection Unit said when he or she told the department in charge of the process control in the Manufacturing Section, "Please do not ship the products until we confirm the Technology Unit" when he/she was checking a defect report with respect to an defect which was detected in a previous process during the final inspection, he/she was told, "Please just ship them quickly."

There was an employee who pointed out that the causes for the pressure on the inspection departments were that there was pressure of delivery date on sales and manufacturing departments from customers and there was strong pressure to avoid stopping customers' line.

In addition, there was an employee who pointed out that there was not sufficient space to store stock in the Niigata Plant, which was located in an urban area, and DM actually could not have stock because production could not keep up with orders. Another

---

[36] There were 27 final inspectors at the end of fiscal year 2016, and there were 61 inspectors at the end of fiscal year 2017, increased by 34 people. The number of final inspectors of Machinery Parts was increased by 32 and that of Functional Parts was increased by 2.

[37] According to the aggregated data of the delivery date and final inspection date after February 2017 (containing only cases in which final inspection was implemented within a month from the delivery date) made by the Inspection Unit of the Niigata Quality Assurance Section, the average number of days between shipment and the final inspection of Machinery Parts was 13.5 days in February 2017, and it became 9 days in January 2018.

reason why shipment of Non-Conforming Products became an ordinary state, it is considered, is that there was not much stock and products shipped to distributors immediately shipped to customers for use.

(6) Reduction in the consciousness for quality

There are some employees in DM who stated that the employees' consciousness for quality of products to be shipped had been reduced because misconduct, such as omission of final inspection and rewriting of inspection report, had been continued chronically for many years. Among the inspectors responsible for final inspections, there was one who said "I thought improvement measures would not be executed and situation would not change completely even if I found Non-Conforming Products in the final inspection and issued a defect report."

In addition, there were few opportunities of systematic training for quality control such about meanings of inspection, and quality control training was basically left to OJT.

Based on these backgrounds, it must be said that the consciousness for quality of its products had been reduced in DM.

3 Analysis of the root causes of continued release of Non-Conforming Products even after discovery of the First Discovered Incidents

Analysis of the causes which were common in the First Discovered Incidents and the Later Discovered Incidents is shown in 2 above, but the reason why the Non-Conforming Products continued being released, etc. even after First Discovered Incidents were discovered and the recurrence preventive measures against the release of the Non-Conforming Products were established and executed in DM is important to know the root causes of this case in DM, and the following are considered to be the root causes.

As shown in 2(4) above, even though the number of employees in the inspection departments was increased and inspection equipment was improved, it was still not enough to implement the final inspection before shipment and it was in an insufficient state.

As shown in 2(1) and (2) above, while the process capacity of producing products which meet customer specifications had decreased due to deteriorated manufacturing facilities and so forth and it barely had available capacity to improve quality, DM was too preoccupied with the responses and so forth to quality improvement of products designated for the 100% inspection screening by customers after discovery of the First Discovered Incidents. Accordingly, even though it was sequentially revealed that there were the Non-Conformance problems in products other than the Non-Conforming Products which were subject to rewriting and so forth of the inspection report in the First Discovered Incidents, the management and employees of DM thought it did not have available capacity to engage in further detailed fact-finding investigation thereafter, and inform MMC and/or customers and deal with it.

Afterward, while the number of products which were necessary to improve was unexpectedly increasing during the process through the Quality Improvement Project, etc. of checking Non-Conforming Products of which were detected, it was unable to expect early quality improvement, and the management and employees of DM further recognized the seriousness of the problems.

Under the situation above, partly because the management and employees of DM felt fear and pressure that if they informed MMC or customers that the issues of the release of the Non-Conforming products had not been improved, it might lead to a situation where the automobile parts manufacturers and automobile manufacturers that are DM's customers have to stop their production lines, they were trying to keep a lid on the situation without it being discovered under the judgement that it could not take the option of revealing the situation and seeking a radical solution in order for the company to survive.[38]

As described above, the biggest reason why Non-Conforming Products' release and so forth continued even after discovery of the First Discovered Incidents in DM is because of the seriousness of the Non-Conforming Products' problem which DM had as a manufacturer, and, combined with the fear and pressure of stopping lines of the automobile parts manufacturers and automobile manufacturers that are DM's customers, it is considered that it could not reveal the problems.

Section 6 Recurrence Preventive Measures

1 Receipt of orders in accordance with process capacity and improvement of process capacity by strengthening technology departments

As shown in 5.2(1) above, DM was under the situation of receiving unreasonable orders which were beyond its process capacity , so it should strengthen quality control systems from upstream so that "it will not develop the Non-Conforming Products" by strengthening the formation of development departments, understanding its process capacity , arranging an organization capable of negotiating specifications with customers appropriately as well as reviewing systems in the order receipt stage such as DR so that they will substantially work.

In addition, as shown in 5.2(2) above, manufacturing facilities were getting aged and old-fashioned, and process capacity of producing products which meet customer specifications had decreased, that caused quality degradation, so it should aim to improve the process capacity by renewing manufacturing facilities and so forth. Furthermore, it should arrange an organization capable of improving quality by strengthening the formation of technology departments because the technology team which was expected to perform a function of improving quality did not play the role since it was short of staff

[38] Meanwhile, some members on the ground in manufacturing and inspection stated the opinion that the improper/irregular circumstances of the continued production and release or Non-Conforming Products needed to be rectified.

as well as swamped with dealing with a lot of defect reports and so forth, that caused a situation incapable of aiming to improve quality.

2 Receipt of order in accordance with production capacity

As shown in 5.2(2) above, DM received orders which were beyond its production capacity, that caused the production of the Non-Conforming Products, and then it received further unreasonable orders which were beyond its production capacity without being able to improve quality to ensure profits, and as a result, it got caught in a vicious cycle of producing more Non-Conforming Products.

Since the discovery of the First Discovered Incidents, the Production Capacity Adjustment Meeting has been held monthly as a recurrence preventive measures against process changes without customers' approval to check the balance of production capacity and demand, and it discussed the issue of the adjustment of imbalanced facilities, including the necessity of process change and new facility investment, but due to a lack of idea of considering a proper volume of orders that could be accepted in light of the company's production capacity, DM should understand its production capacity exactly and receive a proper volume of orders in accordance with the production capacity going forward.

In addition, systems or standards of judgment for determining the propriety of receiving orders considering production capacity and so forth have not been established so far, and it should establish such systems or standards of judgment and institutionally ensure appropriate amount of receipt of orders afterward.

3 Reconstruction of quality assurance framework

As shown in 5.2(3) above, the quality assurance framework at DM was not based on the premise that the final inspection should be implemented before shipment, so it is necessary to review internal rules and production management systems and reconstruct the quality assurance framework so that the final inspection will be appropriately implemented in conditions agreed with customers before shipment afterward.

After discovery of the Later Discovered Incidents, DM implemented tentative countermeasures such as changing the production management system and increasing the number of inspectors for the final inspection and the 100% inspection screening so that it would be able to ship products only after the final inspection was implemented, but it should review the quality assurance framework and revise internal rules such as the quality assurance manual accordingly, and instill the fundamental principle of quality control by conducting an in-house training periodically afterward.

4 Automation of inspection equipment, and increase of the number of inspectors and inspection ability

As shown in 4.2(1)A(c) and 5(1)C above, management-level employees and inspectors responsible for final inspections in the inspection departments easily rewrote inspection reports on a shared server by manual operation, so it should automate

inspection equipment to eliminate an opportunity for rewriting in order to prevent inspection reports from being rewritten afterward.

In addition, as shown in 5.2(4) above, after the discovery of the First Discovered Incidents, the number of inspectors responsible for final inspections was increased, but the workload which is necessary to implement the final inspection before shipment in accordance with an agreement with customers was not calculated and understood, and as a result, there was still a shortage of manpower. Afterward, it should calculate and understand appropriate number of employees and secure necessary number of employees if there is a shortage, and it is also necessary to strengthen the formation of the inspection departments to enhance quality of inspection ability. Furthermore, some parts of practice such as introducing three-dimensional measuring machines were already implemented, but it should aim to establish inspection systems with higher inspection efficiency by automating inspection equipment even more.

5 Reduction of pressure of delivery date by appropriate management of inventory quantity

As shown in 5.2(5) above, as a result of receiving orders which were beyond production capacity, DM could not ensure appropriate amount of stock, and this was one of the reasons for the pressure of delivery date on the inspection departments.

After the discovery of the First Discovered Incidents, as a result of transferring the inspection departments from under manufacturing departments to under quality assurance departments as one of the recurrence preventive measures, it is able to appreciate that independence and the function of a check-and-balance system of the inspection departments have been enhanced to some extent; however, it is considered that it is still not enough to eliminate the pressure of delivery date and so forth. As discussed in 2 above, it should aim to reduce the pressure on the inspection department of delivery date and so forth by receiving appropriate orders in accordance with production capacity as well as managing stock to ensure appropriate amount of stock afterward.

6 Awareness makeover in quality

As shown in 5.2(6) above, the consciousness for quality of products had been reduced because misconduct had been continued chronically for many years and there was no opportunity of systematic quality control training in DM, so it should implement systematic quality control trainings not only for the inspection departments, but also for all of employees and reform awareness in quality.

In addition, as shown in 5.3 above, the management and employees of DM did not inform MMC and customers of the situation of the problem and aimed to keep a lid on the matter without the problem being discovered due to the recognition of severity of the problem with respect to the Non-Conforming Products, and the fear and pressure that it might stop lines of the automobile parts manufacturers and automobile manufacturers that are DM’s customers. Going forward, the management needs to raise its own risk sensitivity with respect to quality issues even more, and take measures such as continuous delivery of messages to employees. Although some employees on the ground in

manufacturing and inspections gave their opinion that the improper/irregular circumstances of ongoing production and release of Non-Conforming Products needed to be rectified, the management failed to adequately reflect these opinions in their decision-making. In light of this fact, going forward, the management needs to work more closely with employees on the ground, and must strive to appropriately reflect the awareness of the issues and opinions held by those actually engaged in the work in management decision-making. Furthermore, it should promote the measures of preventing internal common sense from being separated from that of the society, such as positively adopting external perspectives including opinions of quality consultants.

END