

Exhibit

Special Investigation Committee Report on
‘Improper Activities in Quality Management’

March 25, 2019
Special Investigation Committee of
Sumitomo Heavy Industries, Ltd.

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Glossary

(Japanese alphabetical order)

Term	Description
1st group of industry laws	Laws and regulations that apply to management of a specific business
industry laws	Laws and regulations that apply to management of businesses and places of business
SCM	Sumitomo (S.H.I) Construction Machinery Co., Ltd.
SCMS	Sumitomo (S.H.I.) Construction Machinery Sales Co., Ltd.
SACL	Safety Association of Construction and Loading Vehicles, a public interest incorporated association
Recurrence Prevention Measures Study Team	Recurrence prevention measures study team in which a Representative Director and Executive Vice President of the Company acts as the leader and general managers of divisions at the head office participate as members
DSG	Defense Systems Group, Sumitomo Heavy Industries, Ltd.
DSG's quality issues	Issues such as falsification of test results shown in certificates of analysis at the Defense Systems Group, Sumitomo Heavy Industries, Ltd.
Investigation Committee	Special Investigation Committee on 'Improper Activities in Quality Management'
The Company	Sumitomo Heavy Industries, Ltd.
Tollgate	For example, this refers to a checking station in a system where major milestones are set up in processes from product planning, basic design, detailed design, etc. to launching to the market; products at each phase are reviewed (evaluated) by concerned persons; and if approval is not obtained from such persons at each phase, the products cannot pass through the checking station and go to the next phase. A representative tollgate is Design Review (DR) at the design phase.
Nacco	Sumitomo NACCO Forklift Co., Ltd.
Nacco Sales	Sumitomo NACCO Forklift Sales Co., Ltd.
Raw data	Refers to inspection records that contain actual inspection and measurement results prepared by an examiner by hand, etc. and that provide evidence for inspection and measurement data described in certificates of analysis and other quality assurance documents submitted to customers, etc., or refers to such inspection and measurement data.
2nd group of industry laws	Laws and regulations that apply to management of places of business
PMD	Plastic Machinery Division, Sumitomo Heavy Industries, Ltd.
Mechatronics	Mechatronics Division, Sumitomo Heavy Industries, Ltd.
HMX	Sumitomo Heavy Industries Himatex Co., Ltd.
SHI-GB	Sumitomo Heavy Industries Gearbox Co., Ltd.
SHI-MH	Sumitomo Heavy Industries Material Handling Systems Co., Ltd.
SJS	Sumitomo Heavy Industries PTC Sales Co., Ltd
QMS	Quality management system

1. Introduction

In view of the fact that compliance issues such as improper dismantling and maintenance and improper specific self-inspections of large special vehicles at Sumitomo (S.H.I.) Construction Machinery Sales Co., Ltd. (hereinafter “SCMS”), Sumitomo NACCO Forklift Sales Co., Ltd. (Nacco Sales), etc. were detected, Sumitomo Heavy Industries, Ltd. (hereinafter the “Company”), on September 14, 2018, instructed all divisions to have a quality management overhaul. In addition to the aforementioned improper dismantling and maintenance and improper specific self-inspections of large special vehicles, improper activities in quality management were detected at five divisions (Sumitomo Heavy Industries Himatex Co., Ltd. [hereinafter “HMX”], Sumitomo Heavy Industries Gearbox Co., Ltd. [hereinafter “SHI-GB”], the Plastic Machinery Division of the Company [hereinafter “PMD”], Sumitomo Heavy Industries PTC Sales Co.,Ltd. [hereinafter “SJS”] and Sumitomo Heavy Industries Material Handling Systems Co., Ltd. [hereinafter “SHI-MH”]) as a result of the overhaul.

Because the Company has united with all of its Group companies to aim to achieve a business management success through reinforced governance by upholding the management policy of giving the highest priority to compliance, it is deeply regrettable that we found a series of improper activities. The quality of products and services affects the bedrock of trustworthiness of the Company and therefore we must formulate more effective recurrence prevention measures.

The Company took the recent incidents seriously and established a Special Investigation Committee (hereinafter the “Investigation Committee”) as shown below. Furthermore, on January 24, 2019, we announced new improper activities identified at our four divisions (SHI-GB, PMD, SJS and SHI-MH) other than incidents that were already made public and the establishment of the Investigation Committee.

After this course of action was taken, the Investigation Committee rigorously investigated the recent improper activities in quality management and reports the investigation results as follows.

2. Establishment and purposes of the Investigation Committee

2.1. Background to establishment of the Investigation Committee

In view of the fact that compliance issues such as improper dismantling and maintenance and improper specific self-inspections of large special vehicles were detected, the Company, on September 14, 2018, instructed all divisions to have a quality management overhaul.

As a result of the overhaul, improper activities were detected at five divisions as mentioned earlier. In view of this, the Investigation Committee was established on January 15, 2019 to achieve the following purposes.

2.2. Purposes of the Investigation Committee

- (i) Verify the appropriateness of fact-finding and causal investigation conducted by each

division and recurrence prevention measures taken by the division for each incident, and make a proposal to each division

- (ii) In view of (i) above, verify the appropriateness of causal investigation conducted and recurrence prevention measures taken by the Group and make a proposal prepared by the Investigation Committee

2.3. Targets investigated by the Investigation Committee

The Investigation Committee set improper activities conducted by the following seven divisions and companies as targets of the investigation.

- SCMS (improper dismantling and maintenance and improper specific self-inspections of large special vehicles)
- Nacco Sales (improper dismantling and maintenance and improper specific self-inspections of large special vehicles)
- HMX (improper inspections of mill rolls, etc.)
- SHI-GB (improper inspections of large-size gear reducers)
- PMD (improper inspections of sealing press)
- SJS (improper activities related to inspection results for gear reducer overhaul work)
- SHI-MH (improper regular inspections of moving walkways)

It should be noted that of the above incidents, those at SCMS and Nacco Sales were already addressed by implementing recurrence prevention measures after causal investigation and recurrence prevention measures had been formulated upon internal investigation and a report on matters including causal investigation and recurrence prevention measures had been made to regulatory authorities last year.

However, from the viewpoints indicated below, we have decided that those incidents at both companies be included in targets of the investigation by the Investigation Committee.

- (1) As with incidents identified later, those incidents at both companies were improper activities in quality management and, in some aspects, have common causes and backgrounds to incidents identified later.
- (2) As for those incidents at both companies, it is helpful in preventing recurrence of the incidents at both companies to verify the appropriateness of the fact-finding investigation, causal investigation and recurrence prevention measures that were already implemented and to examine additional matters to be reflected in causal investigation and recurrence prevention measures.
- (3) Verification of the appropriateness of the fact-finding investigation, causal investigation and recurrence prevention measures with respect to incidents at both companies helps examine causal investigation and recurrence prevention measures for the Group as a whole.

In addition, at HMX, improper activities were newly identified with respect to chain-manufacturing products and surface treatment products after establishment of the Investigation Committee. For this reason, we have decided that those newly-identified improper activities be included in targets of the investigation.

Improper dismantling and maintenance of large special vehicles at Sumitomo Heavy Industries Construction Cranes Co., Ltd. was disclosed to the public on January 24, 2019 but such improper activities were excluded from the scope of investigation by the Investigation Committee due partially to the fact that the improper activities were limited.

2.4. Composition of the Investigation Committee

The Investigation Committee has been chaired by an external director who can judge situations objectively and impartially, and an external corporate auditor was appointed as a committee member from the same viewpoint. On the other hand, to ensure causal investigation and formulation of highly effective recurrence prevention measures taking into account diversification of our businesses, subsequent diversification of risks, characteristics of the businesses, etc., a Director and Vice Presidents at the head office and division managers at the head office were appointed as deputy chairperson and committee members.

- Chairperson: Hideo Kojima, External Director
- Deputy Chairperson: Hideo Suzuki, Director, Executive Vice President and General Manager, Corporate Finance, Accounting & Administration Group
- Member: Takeo Wakae, External Corporate Auditor
 - Hiroo Morita, Senior Vice President and General Manager, Human Resources Group
 - Tomoki Abe, General Manager, Internal Control Group
 - Tatsuro Ito, General Manager, Corporate Legal Department
 - Toshihiko Taguchi, General Manager, Corporate Quality Group
- Secretariat: Internal Control Group

2.5. Investigation period of the Investigation Committee

The Investigation Committee started to conduct activities on January 15, 2019, continued investigation until March 25, 2019 and held twelve meetings in total during the above period. In addition, the Investigation Committee reported on the details and progress of investigation at a monthly meeting of the Board of Directors of the Company.

2.6. Investigation and examination items of the Investigation Committee

To investigate the actual situation and causes of improper activities and examine recurrence prevention measures, the Investigation Committee investigated and examined the following items.

2.6.1. Verification of past measures to handle risks

In May 2013, issues such as falsification of test results shown in certificates of analysis at the Defense Systems Group (hereinafter “DSG”) of the Company were found (such issues are hereinafter referred to as “DSG’s quality issues”). In response, the Investigation Committee checked the status of horizontal implementation of measures for checking and preventing similar problems at other divisions.

In addition, taking into account the detection of quality data falsification issues at other companies, the Investigation Committee checked the method of conducting self-inspections and

overhauls for quality management at the Group and the results thereof.

Furthermore, as for operational risks that occur in the performance of daily work conducted the Group, the Committee also verified the situation of occurrence of operational risks in the past, measures taken to handle such risks and the status of governance for operational risks at the Group.

2.6.2. Verification of the appropriateness of fact-finding and causal investigation conducted by each division and recurrence prevention measures taken by the division for each incident, and a proposal to each division

The Investigation Committee checked the details of fact-finding and causal investigation conducted and recurrence prevention measures taken by seven divisions for each incident, verified the appropriateness thereof and made a proposal to each division.

2.6.3. Checks on the status of operation of the internal control system

With respect to the Company and its applicable group companies, the Investigation Committee checked whether internal control systems work properly and are maintained and operated appropriately in accordance with the basic policy of building an internal control system and the Group's Business Management and Administration Regulations.

2.6.4. Proposal for causal investigation and recurrence prevention measures at the Group

With respect to causal investigation and recurrence prevention measures for the Group, the Investigation Committee requested a report on the results of study by the recurrence prevention measures study team (in which a Representative Director and Executive Vice President of the Company acts as the leader and general managers of divisions at the head office participate as members; hereinafter the "Recurrence Prevention Measures Study Team") established at the head office of the Company. The committee verified the appropriateness of such results and other matters and put together a proposal for causal investigation and recurrence prevention measures.

3. Results of verification of past measures to handle risks

3.1. Results of verification of measures to respond to detection and ascertainment of risks

In May 2013 when DSG's quality issues were detected at the Group, we investigated whether there were similar issues at relevant divisions, and implemented recurrence prevention measures. However, we failed to thoroughly conduct such investigation and implement such measures at other divisions. Divisions other than DSG were cautioned by the Corporate Quality Group at a meeting of the Quality Assurance Manager Committee, and the Internal Control Group decided to follow up on the results of audits of the Quality Management System (hereinafter "QMS") conducted by the Corporate Quality Group in the next fiscal year (fiscal 2014) and beyond. However, horizontal implementation of measures for checking and preventing issues similar to DSG's quality issues was not satisfactory at other divisions.

Additionally, when checking the results of compliance awareness surveys conducted by the Group in the past several years, we found that a part of the improper activities identified recently

had been pointed out as acts of violation noticed or heard of. Although relevant divisions conducted an investigation in response to such suggestion from workplaces, facts were not checked sufficiently. The Internal Control Group also received a report on the check results from divisions but did not take any measures that go beyond checking such results.

3.2. Results of verification of the status of quality management-related governance at all companies

In internal audits conducted at each division, certificates of analysis were not checked against raw data.

The Corporate Quality Group conducted QMS audits on 26 domestic divisions related to manufacturing, and the audits focused on important processes for quality assurance activities in fiscal 2015 onward in particular, with an emphasis on reinforcement and improvement of quality management capacity to share information on the status of quality, resolve quality issues, reduce quality risks, improve the development process, and reduce statistical losses due to spoiled work. In fiscal 2018 in particular, additional follow-up measures were implemented based on the results of quality management surveys conducted in January to February 2018.

As a result, the status of quality management at each division was improved year after year, but in these QMS audits, measures were not implemented such as checking certificates of analysis and other quality assurance documents against raw data. As such, it was difficult to detect improper activities identified this time.

3.3. Results of verification of the method of implementing self-inspections in quality management, and implementation results

At other companies, fraudulent acts related to product quality and other issues were detected successively, including recall cover-ups in the 2000s, data rigging in the mid-2010s onward, and inspection data falsification in fiscal 2017 onward in particular, etc. In response to this, in December 2017, the Japan Business Federation issued a notification entitled “Measures for Improper Incidents Related to Quality Management” requiring its member companies to take measures such as investigating fraudulent and improper acts related to quality management and making public acts of violations of laws and regulations, etc. if such acts are found.

As a result, the Corporate Quality Group conducted “investigations related to quality management” targeting seven divisions and 30 group companies within the Group from January to February 2018. However, these investigations did not include checks against raw data (that were done at subsequent occasions), and therefore improper activities related to quality management were not found.

In addition, those investigations focused on divisions related to manufacturing and investigations on service-related quality management at distributors and service providers were not conducted. At that time, risks associated with service quality management were not fully recognized.

3.4. Results of verification of the method of implementing quality management overhauls, and implementation results

In view of the fact that improper dismantling and maintenance and improper specific self-inspections of large special vehicles were detected at the Group since May 2018, the Corporate Quality Group, on September 14, 2018, instructed seven divisions and 42 group companies to have a “quality management overhaul.” As a result, thorough overhauls including checking quality assurance documents against raw data were implemented at all domestic divisions consisting of divisions related to manufacturing and divisions related to sales and services (investigation period: from September 18, 2018 to December 31, 2018). As a result of the overhauls, improper activities in five divisions were detected, but we cannot deny that we failed to take prompt measures in the period until the detection.

3.5. Results of verification of the status of governance at the head office for compliance-related operational risks

Among business risks and operational risks (compliance-related ones and non-compliance-related ones) in the course of conducting business, the Group regards risks that have a material impact on the Group in particular as prioritized risks, and has managed such prioritized risks in accordance with the “Internal Control System (Prioritized Risk Management) Operation Regulations” in order to take systematic preventive and precaution measures for those risks. As the business risks and operational risks vary depending on the division, we have evaluated risks for each division, determined what risks are prioritized, and then taken risk reduction measures and preventive and precaution measures each year.

In view of the fact that a lot of compliance-related operational risks were found at the Group recently, we checked changes in the state of occurrence of risks from past to present and verified the current state of governance at the head office.

As a result, we confirmed insufficiency in quality management and risk management related to industry laws among other issues.

4. Verification of the appropriateness of fact-finding and causal investigation conducted by each division and recurrence prevention measures taken by the division for each incident, and a proposal to each division

4.1. Method of verifying the appropriateness for each incident

As for each incident, the relevant division conducted a fact-finding investigation on improper activities, identified the causes and formulated recurrence prevention measures. The Investigation Committee conducted investigations indicated below with respect to the results of the fact-finding investigation and causal investigation and recurrence prevention measures implemented by each such division, and then the committee verified the appropriateness thereof based on the investigation results.

- a. To check the details of results of the fact-finding investigation into each incident, the Investigation Committee requested each division to submit related materials and reviewed the content of the materials.
- b. The Investigation Committee interviewed persons in charge and managers at relevant

divisions to examine the results of the fact-finding investigation and causal investigation and recurrence prevention measures implemented by divisions.

- c. To clarify the timing of start of improper activities, motives, persons involved and other matters with respect to incidents at HMX, SHI-GB, PMD, SJS and SHI-MH, the Investigation Committee checked the results of interview surveys of related persons conducted by the Internal Control Group.

4.2. Content of proposal for each incident

Based on the results of verification of appropriateness of fact-finding and causal investigation and recurrence prevention measures for each incident, the Investigation Committee made a proposal to each division about matters to be reflected in relation to facts and causal analysis and specific matters to be added as a part of recurrence prevention measures. The major details of proposals made by the Investigation Committee to divisions as matters to be added as a part of recurrence prevention measures for each incident are as shown in the appendix.

Each division received a proposal from the Investigation Committee, re-examined facts, causal analysis and recurrence prevention measures and again made a report to the Investigation Committee on the re-examination results.

The Investigation Committee confirmed that the content of its proposal was reflected in the details of the report from each division on the re-examination results.

(Appendix) The major details of proposals as matters to be added as a part of recurrence prevention measures for each incident

Division	Incident	Proposal for recurrence prevention measures
SCMS	Improper dismantling and maintenance of large special vehicles	(i) Clarification of roles, responsibilities and management details of supervisory branch offices (ii) Development of education system for dismantling and maintenance (iii) Clarification of management when the dismantling and maintenance work is outsourced
	Improper specific self-inspections	(i) Clarification of internal audits
Nacco Sales	Improper dismantling and maintenance of large special vehicles	(i) Clarification of roles, responsibilities and management details of customer support departments, supervisory branch offices and branch offices (ii) Measures to improve management of services (iii) Audits by the internal audit department of Nacco
	Improper specific self-inspections	(i) Clarification of audits by the internal audit department of Sumitomo Nacco
HMX	Improper inspections of mill rolls, etc.	(i) Strengthening of a personnel system (ii) Addition of recurrence prevention measures for chain-manufacturing products and surface treatment products for which improper activities were newly detected
SHI-GB	Improper inspections of large-size gear reducers	(i) Sorting out of specifications, inspection guidelines, etc. (ii) Revision of management of test run time (iii) Rules for checking inspection records and certificates of analysis (iv) Revision of internal audit processes
Plastic injection molding machine	Improper inspections of sealing press	(i) Management, supervision, instructions and support measures regarding sealing press business (ii) Clarification of process for reviewing and approving certificates of analysis (iii) Clarification of procedures for revising the quality management process when work is outsourced (iv) Clarification of process for revising inspection items

SJS	Improper activities related to inspection results for gear reducer overhaul work	<ul style="list-style-type: none"> (i) Sorting out of contents of contracts; clarification of measurement methods and measurement criteria (ii) Revision of review and approval of shipment judgments and reports submitted to customers (iii) Clarification of system where the service supervision department strengthens management and conducts audits (iv) Clarification of division of roles between SHI-GB and SJS and responsibility framework (v) Deployment, development and training of service personnel
SHI-MH	Improper regular inspections of moving walkways	<ul style="list-style-type: none"> (i) Clarification of responsibility framework for regular inspections of moving walkways

5. Checks on the status of development and operation of the internal control system

The Group maintains and operates internal control systems in accordance with the basic policy of building an internal control system, and we checked the status of development and operation of such systems.

5.1. Investigation and checking methods

(i) The status of development of internal control systems was investigated and checked as follows.

(1) Status of development of regulations and policies

Basic policy of building an internal control system, the Group's Business Management and Administration Regulations, five regulations (compliance manual, accounting code, employee handbook, list of approval authorities and information security policy), ethics card

(2) Status of development of systems and frameworks

Internal control promotion organization, prior discussion reporting system, J-SOX, prioritized risk management, development of whistle-blower system (ethics hotline), work audits, status of development of prevention activities

(3) Status of collection of written pledges

Status of collection of written pledges of managerial staff and written pledges of directors and corporate auditors of affiliated companies

(ii) Furthermore, the status of operation of internal control systems was checked in light of the incidents identified this time.

5.2. Investigation and check results

(i) As a result of investigation and checks, we confirmed that with respect to the Company and its applicable group companies, the status of development of internal control systems was generally good.

On the other hand, as for a part of subsidiaries of such group companies, some items were not included in a part of regulations, policies, systems and frameworks, and we confirmed that there were problems in development of internal control systems in such subsidiaries. This time, improper activities in quality management were identified in those subsidiaries as well, and therefore it is necessary to improve regulations, policies, systems and frameworks where problems were found, in order to prevent the recurrence of improper activities identified.

(ii) In relation to the operation of internal control systems of the Group, the improper activities identified can be regarded as problems in promotion of compliance in quality management operations.

For this reason, we need to go beyond identifying causes of each incident and the Group should make every effort to investigate the causes and implement recurrence prevention measures, thereby improving the operation of internal control systems.

6. Summary of fact-finding and causal investigation and recurrence prevention measures for each incident

As described earlier, the Investigation Committee verified the appropriateness with respect to each incident, and made a proposal to each division based on the verification results.

Each division again made a report on the results of re-examination by the division based on the proposal, and the Investigation Committee confirmed that the content of its proposal was reflected in the details of the report from each division.

A summary of facts, causal investigation and recurrence prevention measures that was compiled for each incident after the confirmation is as shown in the attachment.

Each division will be urged to reliably implement recurrence prevention measures according to the content of the attachment.

7. Investigation of causes of improper activities in the Group

As for improper activities in quality management identified this time, nine cases of such activities were identified in seven divisions. The Investigation Committee examined matters as shown below and investigated the causes of improper activities identified in the Group recently.

- a. With respect to the nine cases of improper activities identified at seven divisions this time, the Investigation Committee investigated the causes of each incident as described in “4. Verification of the appropriateness of fact-finding and causal investigation conducted by each division and recurrence prevention measures taken by the division for each incident, and a proposal to each division.” The committee investigated the causes of each incident and identified common causes to the incidents.
- b. As for results of verification of causal investigation conducted and recurrence prevention measures created by the Recurrence Prevention Measures Study Team, the Investigation Committee received a report and examined the results.
- c. With respect to the nine cases of improper activities identified this time, the details and causes of such activities differ depending on the activities, as described in the attachment mentioned in 6. above.

However, all the improper activities identified this time were conducted in relation to product/service quality management, and common causes to the incidents were found as well.

For this reason, in investigating the causes of improper activities identified this time, we analyzed common causes to all the incidents and common causes to some, if not all, incidents. In addition, as for causes that are considered to relate to some incidents of the improper activities that occurred this time but that are considered to be potential risks in quality management in other divisions of the Group, we have decided to put together such causes because we thought that such causes will result in such other divisions conducting the same improper activities as those identified this time.

Hereinafter, we will describe the results of such investigation of causes.

7.1. Disregard for requirements (laws, regulations and specifications) relating to products and

services

(i) Insufficiency in understanding and awareness of requirements under laws and regulations (industry law)

Improper dismantling and maintenance and improper specific self-inspections of large special vehicles, and improper regular inspections of moving walkways (which are included in improper activities identified this time) were conducted due to insufficiency in understanding and awareness of requirements under laws and regulations (the Road Transport Vehicle Act, the Industrial Safety and Health Act and the Building Standards Act) and rules and guidelines based on laws and regulations.

Not only specific personnel in charge but also divisions that perform the relevant operations had an insufficient understanding and awareness of industry law and divisions were also lacking awareness of risks associated with the relevant operations.

(ii) Disregard for customers' specifications

Normally, products that meet customers' specifications are required to be shipped, but there were cases of improper activities where personnel disregarded customers' specifications by making judgments such as "this extent of deviation from the specifications can be negated because product performance is sufficient" and "the customer makes no complaint so there is no problem concerning product quality," and falsified inspection data that deviated from customers' specifications.

In some cases, for a long period of time, personnel had not been fully aware of the necessity of meeting customers' specifications as a part of a contract, disregarded customers' specifications and rewritten data that deviated from specifications.

(iii) Ambiguity and uncertainty in specifications presented by customers

When products and services are provided to a customer, products and services that meet specifications of the customer should normally be provided in accordance with the specifications of the customer. However, with respect to products, there were cases where there was a difference in descriptions between a customer's specifications and inspection guidelines submitted to the customer, personnel did not confirm the difference with the customer and left the issue unaddressed, resulting in a discrepancy in recognition of the customer's specifications among internal divisions. With regard to services as well, as described earlier, there were cases where numerical criteria for inspections, etc. were not confirmed with a customer in a contract with the customer. As just described, relevant divisions had an ambiguous and unclear understanding of specifications presented by customers, and due partially to this, improper descriptions, such as falsification of inspection data, were made.

(iv) False descriptions as a result of disregard for requirements (laws, regulations and specifications)

With respect to incidents identified this time, there were improper activities of falsifying inspection and measurement results (measurement data and states of malfunction) in certificates of analysis, etc. as a result of disregard for requirements under laws, regulations and specifications as described in (i) to (iii) above. However, many persons involved did not recognize that false descriptions in certificates of analysis, etc. and submission of them to customers and administrative bodies would cause problems.

7.2. Problems in quality-related frameworks

7.2.1 Problems in the quality management process that lead to improper inspections, etc.

(i) Problems in QMS

To assure the quality of products and services of relevant businesses, divisions has established the QMS, set up a design review (hereinafter a “DR”) session and other tollgates in each process, and established a system where each work is not allowed to proceed to the next phase unless review is conducted and approval is obtained in a tollgate. In this system, the technical division properly judges whether a product/service is acceptable or not based on inspection records, and additionally the quality assurance division is required to make a final judgment on whether the product/service is acceptable or not based on the judgment of the technical division. However, there were problems such as the QMS being formalized or becoming a dead letter, as exemplified by cases where the technical division did not properly judge the acceptability of a product/service and considered out-of-specification products/services as meeting the specifications and where the quality assurance division rewrote inspection data that deviated from specifications or internal reference values.

Furthermore, we are aware of cases where the general manager of the quality assurance division themselves approved the falsification of inspection data by that division. In particular, the quality assurance division makes a final judgment on non-acceptable products and the general manager of the quality assurance division has strong authority to stop shipments. As exemplified by these facts, high independence of such manager and division is expected in the QMS and the division has strong functions to monitor and keep work in check. However, as for the cases where the general manager of the quality assurance division themselves approved inspection data falsified by that division, the quality assurance division did not perform its functions to monitor and keep work in check.

(ii) Problems such as a discrepancy between quality management work manual and actual work

As for many cases of improper activities identified this time, the following and other problems were found: detailed internal regulations (work regulations, inspection guidelines, operation manuals, work standards, work manuals, etc.) for work processes and work procedures with respect to the relevant work were not in place; there was a discrepancy between work manuals and actual work; and inspection and measurement methods shown in work manuals, etc. were ambiguous.

(iii) Insufficient efforts to work on technical issues, and problems not being solved immediately

Under normal circumstances, if issues such as out-of-specification products occur continually, the relevant technical division needs to technically analyze out-of-specification products, variances in actual measurement values, etc. and respond to technical issues, for example by discussing a revision of specifications with customers. However, there were cases where such response had not been made for many years.

In addition, there were also cases where even though measurement items emerged for which it was difficult to take measurements by using an existing measuring instrument

because of technical innovation for products or changes in structures, the inspection division put off implementing measures to solve problems, such as studying the method of technically responding to the issues.

(iv) Disregard for ascertaining own process capacity

When agreeing on specifications with a customer, a division needs to do so after ascertaining its own process capacity. If a division determines specifications for a relevant product with a customer without ascertaining that its own process capacity is low, and if the issue of out-of-standard products occurs, not only the customer will suffer trouble due to a significant delay in delivery resulting from re-production, but a cost increase and other risks are also expected. In improper incidents identified this time, there were cases where although there was a product for which a division's process capacity was low, the technical division failed to ascertain and recognize its own process capacity, and also failed to take measures such as improving the process capacity through enhancement of the production method based on technical studies and discussing a revision of specifications with the customer. This was due to disregard for ascertaining its own process capacity properly.

(v) Problems in the inspection measurement system

In the improper inspection incidents identified this time, there were problems in the inspection measurement system as shown below.

- Insufficient amount of inspection equipment

- Failure to update to inspection equipment capable of taking measurements according to a change in product structures and mechanism
- Insufficiency in efforts to improve precision of inspection measurement system to eliminate issues such as measurement errors of measuring instruments
- Flaws in guidelines for preparing and storing inspection records written by hand or transcribed

7.2.2 Weakness in the system for managing and auditing work quality

(i) Weakness in the system for auditing quality

To date, in internal audits conducted at each division, certificates of analysis have not been checked against raw data.

The Corporate Quality Group conducted QMS audits on 26 domestic divisions related to manufacturing, in fiscal 2015 onward, with an emphasis on reinforcement and improvement of quality management capacity to share information on the status of quality, resolve quality issues, reduce quality risks, improve the development process, and reduce statistical losses due to spoiled work. As a result, the status of quality management at each division was improved, but in these QMS audits, quality assurance documents were not checked against raw data. As such, it was difficult to detect improper activities identified this time.

(ii) Weakness in the management and audit system for industry law

With respect to industry law, each division where improper activities were identified this time did not appoint a department and staff in charge of managing matters related to industry law, and each division failed to take adequate measures to recognize requirements to be complied with in relation to such industry law, establish a management system and manage matters related to the industry law.

The Corporate Legal Department conducts an industry law survey (Survey on registration, notification, appointment, etc. of technicians, qualified persons, managers, etc. required for authorization, permission, etc. of businesses) targeting all domestic divisions once a year. However, with respect to incidents identified this time, some of the divisions did not recognize the applicability of such industry law. In addition, with respect to the Construction Business Act, the Corporate Legal Department also appoints a person in charge, and manages, give instructions to and audits divisions. However, as for other industry laws, the department did not take adequate measures for understanding and recognizing each industry law, managing and auditing matters related to industry law, and providing education and instructions to divisions.

7.3. Problems in frameworks and initiatives for ensuring service quality

As for improper activities in quality management identified this time, such activities were confirmed not only in product quality management but also in service quality management.

As for services, an affiliated company that has split off from a division or shares functions with a division performs services in some cases. This kind of company related to sales or services has no quality assurance division and even if each site was entrusted to manage and secure service quality or the customer support division performed a certain level of management, there were omissions or errors in management of service quality and frameworks and efforts for securing service quality were not adequate.

In addition, there were cases where numerical criteria for inspections, etc. were not confirmed with a customer in a contract with the customer. In addition, even if items and guidelines for inspections were in place, inspection criteria, etc. for individual inspection items were not clarified and in some cases, individual examiners were given authority to determine which criteria, etc. should be used. As just described, in the services business, an agreement with a customer on specifications is unclear in some cases, and due partially to this, improper activities occurred.

7.4. Business management and organizational management that are left in the hands of field workers and fail to strike a balance

(i) Quality assigned a low priority

As a result of measures that gave priority to delivery dates, costs and efficiency (short lead time, costs and efficiency were prioritized for products and inspections in a short period and delivery dates were prioritized for services), a low priority was given to product and service quality.

(ii) Management of small-scale businesses and models, etc.

At divisions, top and senior managers manage business performance and quality with respect to core businesses. However, as for small-scale businesses and models, etc., some persons in charge of such businesses and models were entrusted to manage them, and the businesses and models were not subject to administration and supervision by top and senior managers of divisions, the common administration division, etc., with support and instructions being not provided to such divisions.

(iii) Allocation of resources among service businesses, small-scale businesses and models, etc.

Many of the divisions where improper activities identified this time were confirmed are

operated by the minimum number of personnel, and there has been an insufficiency of their human resources amid the recent revision of time management. In terms of investments in human resources, it has also been pointed out that not only human resources but also education is insufficient.

At the service division in particular, when each site performed service operations, the facilities, equipment, inspection/measuring instruments, etc. were not kept in good condition in some cases, which means that investments in such facilities, equipment and instruments were also insufficient.

(iv) Organization with increased isolation and closed culture

At divisions where improper activities identified this time were confirmed, organizations were vertically divided, each organization was isolated with each operation being left in the hands of a relevant division, and there was an insufficiency in coordinated work and communication between related divisions (such as sales, technical, production, and quality assurance), which resulted in closed organizational culture. Also, little attention was paid to other departments in a division, other Group companies and events at other companies in the world.

At workplaces as well, there was a daily communication problem where information communicated or a problem raised by a member at a workplace is not paid attention to by those around the member.

For this reason, there were few occasions where personnel looked outward and reflected on themselves based on external information, and where they underwent checks or received confirmations and feedback from outside parties and third parties. It is considered that due partially to this, improper activities were continued as a conventional practice for many years.

(v) Business and organizational management subject to insufficient control and supervision by superiors

With respect to operations where improper activities were confirmed, control and supervision by superiors were insufficient in many cases, although this is related to matters described in (ii) to (iv) above. The actual state of operations where work was left in the hands of field workers in charge came to light, as exemplified by the following facts: exchange of information on non-acceptable products between production, technical and quality assurance divisions was basically taken charge of by staff in charge and managers at respective divisions made insufficient judgments on non-acceptable products; even if a staff member consulted their superior on out-of-specification items or made a proposal regarding such items, the managerial staff did not pay appropriate attention to the issue, and substantive measures were not taken; and a superior did not understand the actual state of work and delegated work schedule management, planning of allocation of personnel, preparation of reports submitted to customers, etc. to each staff member in charge.

Because managers at respective sites did not understand the actual state of workplaces, the actual state of improper activities identified this time was not reported to top and senior managers of divisions, and therefore those managers did not become aware of such activities.

(vi) Dependency on individual expertise and fixed allocation of staff

Many of the improper activities identified this time had been conducted continually since long before. The underlying reason for this is actual work practices where operations were not

standardized and documented in manuals and were dependent on individual expertise, and as a result, only persons in charge of relevant operations could understand the details of the operations. There were few personnel rotations with other divisions, resulting in allocation of staff being fixed and the same employees being in charge of the same work for a long time. Due to this, the work was not checked by third parties or other divisions. Such dependency on individual expertise and fixed allocation of staff were major reasons for improper activities not being detected for a long time.

7.5. Failure to thoroughly implement the management policy of giving the highest priority to compliance

The Group has made efforts to thoroughly implement the management policy of giving the highest priority to compliance, under the policy of prioritizing safety and compliance over anything else. In anonymous compliance awareness surveys conducted on employees of the Company and affiliated companies each year, we ask a question about whether compliance is ensured, but the ratio of affirmative answers to the question is very high and almost all employees (99%) answer affirmatively.

However, in view of the improper activities identified this time, we cannot say that the management policy of giving the highest priority to compliance has been thoroughly implemented in the Group as of now.

Recently, we have interviewed persons involved in improper activities, and according to the results of such interviews, many of such persons did not say that they conducted improper activities while they were fully aware of the violations of laws, regulations, customers' specifications, internal standards, etc. Rather, they lacked an adequate understanding of laws and regulations, were not motivated to comply with customers' specifications and rewrote inspection data, etc. on a regular basis, while thinking that there was no problem concerning product quality and performance. In addition, rewritten data itself constitutes a misstatement, but there were many cases where the persons involved had little awareness of misstatements. In view of the above, although the Group upheld the management policy of giving the highest priority to compliance, personnel were not fully aware of the code of conduct that requires compliance with laws, regulations and specifications. As a result, the management policy of giving the highest priority to compliance was not thoroughly implemented.

We consider that while the management policy of giving the highest priority to compliance was not thoroughly implemented at every corner of the Group, personnel performed their duties with a priority given to delivery dates, costs and efficiency, which resulted in personnel conducting and continuing improper activities identified this time.

8. Recurrence prevention measures taken by the Group

8.1. Method of studying recurrence prevention measures

As for recurrence prevention measures taken by the Group, the Recurrence Prevention Measure Study Team prepared a primary draft and reported the study results to the Investigation Committee.

After reviewing the primary draft examined by the Recurrence Prevention Measures Study Team, the Investigation Committee instructed the team to re-examine a part of the draft. As a result, the Recurrence Prevention Measures Study Team created the final version of recurrence prevention measures, which were reviewed by the Investigation Committee again, and the Group put together its recurrence prevention measures as follows.

8.2. Reliable implementation of recurrence prevention measures formulated by the Recurrence Prevention Measures Study Team

The following recurrence prevention measures formulated as described earlier are in accordance with the request of the Investigation Committee, and the committee considers the measures to be appropriate to prevent the recurrence of the recent improper activities.

For this reason, we strongly request that the following recurrence prevention measures be implemented reliably.

8.2.1. The Group's top management exhibiting leadership to thoroughly implement the management policy of improving work quality and giving the highest priority to compliance

- 1) Take every opportunity (including site tours by top management, various meeting bodies, etc.) to regularly communicate messages from top management in regard to the management policy of improving work quality and giving the highest priority to compliance and thorough implementation of such policy, and to continually communicate the messages, thereby promote the thorough implementation of the management policy under the leadership of top management.
- 2) Set up an opportunity for top management and respective divisions to share the awareness of quality-related risks.
- 3) Top management exhibits its leadership to promote recurrence prevention measures (those for the Group as a whole and those for individual incidents) for the Recent Problems, and reviews their progress.

The Recurrence Prevention Measures Follow-up Team described later follows up the progress of recurrence prevention measures for the Group as a whole regularly, before top management reviews such progress.

8.2.2. Strengthening of quality management process

- 1) Overhaul of the quality assurance system for small-scale businesses and models, etc., and review of the system

With respect to the quality assurance system for small-scale businesses and models, etc., a survey is to be conducted on the actual situation including the degree of involvement by divisions supervising such businesses and models, etc., the status of management of them,

independence of quality assurance functions, presence/absence and level of the QMS, and other matters.

Based on the survey results, guidelines for the quality assurance system for small-scale businesses and models, etc. are to be formulated and implemented. In addition, with regard to the guidelines to be formulated, requirements (roles, responsibilities, authority, degree of involvement by divisions in charge, status of management, independence of quality assurance function, presence/absence and level of the QMS, and other matters) for the quality assurance function are to be clarified.

2) Review of requirements of customers (laws • regulations and specifications)

Requirements for reviewing products and services and requirements for managing updates to the requests are to be clarified to formulate guidelines. The requirements are to be formulated by making specification requirements of ISO9001:2015 more specific, and include contents supplementary to the specification requirements, taking into account the Recent Problems.

Efforts are to be made to promote the formulated guidelines based on the results of discussion at a meeting of the Quality Assurance Manager Committee. Based on the formulated guidelines, divisions proceed with the revision of the QMS. Information on the revised QMS is to be shared with the Corporate Quality Group and not only the details thereof but also monitoring indices, etc. for operation and management are to be discussed in order to decide particulars of the management system.

The status of operation of the revised QMS is to be regularly shared with the Corporate Quality Group to move forward with continuous improvement.

3) Revision of the process for deciding to receive orders, and formulation and implementation of guidelines for improving the operation of such process

As for the current process for deciding to accept orders, there were cases where confirmation of customers' requests and confirmation of whether a division's own process capacity can accommodate a customer's request are lacking, and with respect to improper incidents identified this time, this lack of confirmation became one factor for improper activities. For this reason, a tollgate is to be established in the process for deciding to accept orders, and requirements for the tollgate are to be clarified so that they are complied with.

4) Establishment of a quality management process that can deter improper activities

(i) Strengthening of guidelines for improving the reliability of quality data that involves hand operation and manual intervention

In the future, we will aim to remove "hand operation and manual intervention" and eliminate manual transcription work by automatizing it. However, for the near future, we have no choice but to continue the handling of quality data including hand operation and manual intervention. Therefore, guidelines for improving the reliability of quality data including hand operation and manual intervention are to be strengthened. In the guidelines, requirements are to be clarified with respect to education for examiners, granting of qualifications, instructions on the details of inspections, handling of inspection data, etc. so that a framework for preventing improper activities is established.

(ii) Formulation and implementation of guidelines for internal audits in divisions

Requirements for internal audits in divisions are to be clarified in guidelines for such internal audits in divisions. Basically, the guidelines are to be prepared by making specification requirements of ISO9001:2015 more specific and include contents supplementary to the specification requirements, taking into account the Recent Problems. In particular, checks of quality assurance documents with actual objects (checking against raw data) and interviews of on-site examiners are to be included in the guidelines. As for the promotion of the formulated guidelines, the same measures as in 8.2.2.2) will be taken.

5) Formulation and implementation of measures for ascertaining and continually improving process capacity

To prevent shipments of products that fail to meet customers' specifications as a result of acceptance of orders despite process capacity being insufficiently understood, guidelines are to be formulated for the purpose of ascertaining process capacity in advance, checking it against customers' specifications and then clarifying quality risks to enable judging whether orders can be accepted. Processes for ascertaining process capacity and allowing for judgment of whether orders can be accepted are to be clarified in the guidelines.

Process capacity is monitored by the quality assurance department of each division according to the formulated guidelines.

In addition, with respect to products for which process capacity needs to be improved, issues are to be shared between each division and the Corporate Quality Group, and six sigma and other methods are used to solve the issues in order to continually improve process capacity.

6) Review of quality-related risk management

A series of processes for identifying, evaluating, determining responsive measures for and responding to risks related to quality are to be standardized and implemented in each division.

Quality risk information identified by each division is to be aggregated at the Corporate Quality Group and such information is to be disclosed on a database to each division and shared with the division. Furthermore, the Quality Assurance Manager Committee is to deepen discussions about quality risks.

7) Promotion of optimization and automation of the inspection measurement system

Inspection guidelines for the inspection measurement system are to be formulated taking into account the Recent Problems, inspections are to be conducted based on the inspection guidelines formulated at each division, and this is to constitute an audit item for quality audits by the Corporate Quality Group.

Risks identified through the inspections are to be put together by the Corporate Quality Group, feedback is to be given to each division and challenges are to be set for the purpose of optimizing and automatizing the inspection measurement system.

Additionally, the Corporate Quality Group and the Corporate Technology Management Group are to share issues about the inspection measurement system with each division, and provide support in promoting optimization and automation (elimination of manual transcription work).

8) Upgrading and expansion of education on quality

The current education on quality is to be upgraded and expanded and education plans are to be formulated and implemented with respect to level-specific education for personnel in charge of quality at each division and education on quality for all employees.

8.2.3. Strengthening of the head office’s governance system for work quality

1) Strengthening of a quality audit system

A team specialized in quality audits (“Quality Audit Team”) established at the Corporate Quality Group on February 1, 2019 implements quality audits in fiscal 2019 onward. In quality audits, the following are checked (by taking measures such as an interview with on-site examiners): whether quality is managed in conformance with laws, regulations, customers’ requests; whether raw data is reflected accurately in quality assurance documents; whether inspections are conducted properly; and other matters. As for risks identified in quality audits, risk reduction measures are to be drafted at each division and the QMS is to be reviewed. Information on the revised QMS is to be shared with the Corporate Quality Group and effectiveness of such QMS is to be checked in subsequent quality audits.

2) Construction of an industry law administration and audit system

(i) Conducting research on industry laws and doing the follow up after the research

Laws and regulations that apply to management of businesses and places of business (hereinafter “industry laws”) are divided into “laws and regulations that apply to management of a specific business” (hereinafter “1st group of industry laws”) and “laws and regulations that apply to management of businesses and places of business” (hereinafter “2nd group of industry laws”), and surveys (check-sheet method) on the status of compliance with industry laws as shown in the table below, and the follow-up is to be done by the Corporate Legal Department or a division in charge at the head office.

	1st group of industry laws	2nd group of industry laws
Target laws and regulations	Approximately 30 laws and regulations as of now	Approximately 40 laws and regulations as of now
Divisions subject to surveys	The Company and domestic affiliated companies	The Company and domestic affiliated companies
Survey frequency	Once a year	Once a year

(ii) Appointing the “industry law administration manager” in each division

The “industry law administration manager” is to be appointed at all divisions subject to industry laws and is in charge of administration of matters related to industry laws.

(iii) Appointing the “industry law administration staff” in the Corporate Legal Department

The “industry law administration staff” are appointed in the Corporate Legal Department and are in charge of implementation of industry law surveys and follow-ups in the Group as a whole, as well as support and instructions to each division, such as responses to surveys on laws and regulations and individual consultations.

3) Strengthening of governance audits by the Internal Audit Department

- (i) The Internal Audit Department conducts a yearly governance audit to check whether governance of quality management is performed by the Corporate Quality Group properly.
- (ii) The Internal Audit Department conducts a yearly governance audit to check whether governance of industry law administration is performed by the Corporate Legal Department properly.

8.2.4. Study on the Company's frameworks and initiatives for ensuring quality related to services

An approach (framework and initiative) to ensuring quality assurance functions in service businesses is to be studied for each division, and factored in the next-year's medium-term management plan for fiscal 2020 onward.

8.2.5. Promotion of business management and organizational management that strike a balance

1) Appropriate investment in service businesses

In formulating a medium-term management plan for fiscal 2020 onward, checks are done for each division as to whether or not capital investments (investments in facilities, equipment and apparatuses at service centers) and human capital investments (personnel) for service businesses are made properly.

2) Implementation of measures to vitalize organizations

The results of an employee awareness survey conducted in the Group from August to September 2018 are being analyzed at each division. As for improper activities identified this time, there are many cases where factors (problem in internal communication, etc.) that appear to be the causes and that were analyzed by divisions involved in such activities have been confirmed as a result of the awareness surveys.

Therefore, after analyzing the results of the employee awareness survey sufficiently, each division is to implement measures to vitalize organizations, such as vitalization of communication within an organization, enhancement of coordination between organizations and creation of open corporate culture.

In addition, the Human Resources Group checks the implementation status of the measures in each division at the end of fiscal 2019, and the findings are used to create measures for the next fiscal year. The status of improvement in vitalization of organizations is to be checked in the next employee awareness survey (planned to be conducted in fiscal 2020).

3) Strengthening of line management

To strengthen line management, we have provided management training for new managers in domestic affiliated companies by upholding the policy of strengthening management education in the current-year's medium-term management plan for fiscal 2017 onward. Efforts are made to improve the content of education, while the scope of trainees is expanded in fiscal 2019 onward to include not only new managers but also those who have already been in a managerial position.

4) Implementation of a personnel rotation system for the General Manager of the Quality Assurance Department

With respect to the General Manager of the Quality Assurance Department, who plays a vital role in quality assurance, a personnel rotation system is to be studied and implemented to prevent fixed allocation of personnel and ensure assignment of appropriate human resources. Furthermore, an approach to assigning an employee to the position of General Manager of the Quality Assurance Department is also to be studied in view of independence of the General Manager of the Quality Assurance Department from other departments/divisions and exercise of the checking function.

8.2.6. Strengthening of the promotion of compliance

1) Strengthening of risk management

(i) Follow-up of progress of recurrence prevention measures taken by the Group this time

With respect to recurrence prevention measures for the Group as a whole, the Recurrence Prevention Measures Follow-up Team (members of the Recurrence Prevention Measures Study Team consisting mainly of officers at the head office who studied recurrence prevention measures for the Group as a whole this time are assigned as members of the follow-up team) established within the head office continues to follow up on the progress of the recurrence prevention measures in fiscal 2019. It should be noted that an approach (including frameworks) to risk management for fiscal 2020 onward is to be studied separately.

(ii) Gathering of risk-related information and strengthening of responsive measures

The Internal Control Group gathers risk-related information acquired through surveys on how well compliance is understood, the whistle-blower (ethics hotline) system and other channels, groups such information into categories, strengthens an investigation system for information on material risks that fall under fraudulent accounting, violations of laws and regulations, dishonest exaggeration of product quality, etc., conducts a special investigation by the Internal Control Group or a division in charge at the head office as necessary, and otherwise enhances fact-finding investigations and responsive measures.

2) Strengthening of compliance education

(i) Revising compliance manual and providing compliance education

In view of inspection data falsification and other improper activities identified this time in relation to quality management and industry laws, the current compliance manual is to be revised and compliance education is to be provided in all domestic divisions by using the revised compliance manual. In revising the compliance manual, measures are taken, such as inclusion of cases detected this time as examples.

(ii) Providing education on cases of violations of compliance rules

By taking advantage of the opportunity of case-method education (practical education program where members at a workplace discuss issues and responsive measures based on examples of violations of compliance rules and thereby learn about compliance approaches and activities) provided each year, an explanation about cases of violation of compliance rules (fraudulent accounting, violations of laws and regulations, improper activities in quality management, etc.) and education on recurrence prevention are to be provided continually.

9. Additional proposals by the Investigation Committee regarding recurrence prevention measures taken by the Group

Recurrence prevention measures formulated by the Recurrence Prevention Measures Study Team are appropriate as such measures. However, those measures have issues to be studied from the viewpoint of ensuring effectiveness and governance of the recurrence prevention measures, the viewpoint of risk management for the Group that goes beyond risks identified this time, and other viewpoints.

For this reason, the Investigation Committee makes the following proposals regarding additional measures deemed necessary to be implemented besides the recurrence prevention measures formulated by the Recurrence Prevention Measures Study Team.

9.1. Confirming and thoroughly implementing the Sumitomo Business Spirit and Business Principles once again

Improper activities identified this time in quality management contradict the Sumitomo Business Spirit of “placing prime importance on integrity and sound management and not pursuing immoral business” and the corporate mission stating “We will aim to become a machinery manufacturer that continues to provide excellent products and services to the world. With integrity being a key principle in the Group, we will contribute towards society by gaining high respect and confidence from all stakeholders,” which is upheld as the Company’s business principle based on the Sumitomo Business Spirit.

In addition, the improper activities indicated that we cannot say that the Group has succeeded in fully ensuring that work is performed based on values including “Customer First,” “Embrace Changes,” “Commitment to Technology and Innovation” and “Respect People” listed as “Our Values” in Business Principles.

As such, in view of improper activities in quality management that were recently identified, employees are encouraged to reaffirm the Sumitomo Business Spirit and Business Principles, the foundations of our business operations, and make renewed efforts to ensure that such spirit and principles are incorporated into the code of conduct to be complied with by each employee.

9.2. Senior managers exhibiting leadership to thoroughly implement the management policy of improving work quality and giving the highest priority to compliance

Exhibition of leadership by top management to thoroughly implement the management policy of improving work quality and giving the highest priority to compliance is listed as the first measure to prevent the recurrence of the recent improper activities in quality management. Unless top management exhibits strong leadership, it is difficult to eliminate the recently detected improper activities that have been conducted as conventional practices for a long time. To prevent improper activities such as those identified this time, it is necessary to ensure that the management policy communicated by top management for improving work quality and giving the highest priority to compliance is thoroughly implemented in every corner of organizations in each division.

To achieve this, it is absolutely necessary not only for top management of the Group to communicate their messages continually but also for division managers and other lower-

rank senior managers to pay due attention to such message, share the message within the Group, and exhibit their leadership to ensure that the management policy is thoroughly implemented in every corner of their organization.

In addition, to thoroughly implement the management policy, it is essential to ensure two-way communication at each level in each division.

Top management, division managers and other lower-rank senior managers are encouraged to closely communicate with staff in workplaces and exhibit leadership to thoroughly implement the management policy of improving work quality and giving the highest priority to compliance.

9.3. Supervision by the Board of Directors of progress of recurrence prevention measures

Recurrence prevention measures are to be implemented under the leadership of top management, and their progress is to be reviewed at a discussion meeting in which the President participates.

On the other hand, this issue constitutes a major business challenge for the Group and therefore the Board of Directors needs to properly supervise the progress of the recurrence prevention measures.

For this reason, the executive team needs to regularly report the progress of recurrence prevention measures to the Board of Directors, and such measures need to be implemented under proper supervision of the Board of Directors.

9.4. Strengthening of compliance promotion systems

The recent improper activities in quality management brought into light the fact that the management policy of giving the highest priority to compliance among others has not been implemented thoroughly. The Group has established the “Ethics Committee of Sumitomo Heavy Industries” as an organization that complements the Board of Directors’ function to supervise the status of compliance and the committee formulates the basic policy for promoting compliance in the Group, ascertains circumstances where compliance issues occur, gives instructions to prevent the occurrence, and evaluates the content of compliance promotion plans and the status of implementation of the plans.

However, in view of the fact that improper activities identified this time indicated that the management policy of giving the highest priority to compliance has not been thoroughly implemented, we must address the challenge of further enhancing the compliance promotion systems in the Group. It is desirable to re-evaluate the functions of the Ethics Committee of Sumitomo Heavy Industries in order to strengthen the compliance promotion systems of each division and the Group as a whole.

9.5. Promotion of risk management in the Group in the future

In accordance with the basic policy of building an internal control system, the Group has established the internal control promotion system to promote risk management so that systematic and appropriate prevention and precaution measures are taken for risks that are faced in the course of business operations or may occur in the future.

Risks are divided into the following two categories to promote risk management: business risks (changes in economic circumstances, country risks, risks in production, procurement and equipment, human resource risk); and operational risks (such as fraudulent accounting, violations of laws and regulations, labour management, fraudulent acts related to quality management, information security, industrial accidents, fire, explosion, etc. These operational risks are managed by dividing them into compliance-related ones and non-compliance-related ones).

As for improper activities, violations of industry laws, etc. in quality management that were identified this time, the management and audit system for quality and industry laws is to be strengthened in the future, and we consider that recurrence prevention measures for such risk management will be taken.

However, risks that the Group currently faces or may face in the future are not limited to the risks that occurred this time and the Company faces a variety of risks in the course of its business management. Such risks vary depending on the divisions and the impact of the risks on business management, the frequency of occurrence of the risks, and other factors also vary and risk items that major efforts should be made to work on also vary depending on the current business environments. In addition, with respect to risk items, we consider that the Company needs to carry out more precise risk management not only for operational risks (compliance-related ones and non-compliance-related ones) that we currently use our major efforts to address but also business risks.

The Group needs not only to take recurrence prevention measures for the recent improper activities in quality management but also to re-examine the promotion of frameworks and specific measures for the afore-mentioned risk management in general. Furthermore, it is also necessary to re-examine the Board of Directors' approach to supervising the risk management.

End

(Attachment)

Improper dismantling and maintenance of large special vehicles at SCMS

1. Overview of applicable businesses

1.1 Description of subject products and work for which improper activities were conducted

Dismantling and maintenance of asphalt pavers, rollers, tire shovels, graders, snow removers, forklifts, etc. (including machines manufactured by OEMs and other companies)

1.2 Intended applications of products

Asphalt pavers, rollers: road pavement work

Tire shovels, graders: construction work

Snow removers:
removal of snow when
snow accumulates

Forklifts: material
handling

1.3 Amount of sales for subject products and work (fiscal 2017)

Sales: 50,000,000 yen (proceeds related to dismantling and maintenance of large special vehicles)

2. How the improper activities were detected

We received the *Kokujisei* Notice No. 38 “Appropriate Implementation of Dismantling and Maintenance Work” dated as of April 24, 2018 from the Architecture and Building Engineering Division of the Road Transport Bureau of the Ministry of Land, Infrastructure, Transport and Tourism, requesting us to disseminate and thoroughly implement dismantling and maintenance work in certified factories (maintenance companies certified by the government) in accordance with the Road Transport Vehicle Act. As such, we conducted a detailed survey on the status of dismantling and maintenance work performed by domestic Group companies of Sumitomo (S.H.I) Construction Machinery Co., Ltd. for large special vehicles and as a result, improper activities were detected in relation to the dismantling and maintenance work.

3. Results of investigation into the improper activities

3.1 Investigation method

With respect to the details of maintenance work for asphalt pavers, etc. that fall under large special vehicles defined in the Road Transport Vehicle Act, an investigation into each case was conducted by checking an invoice, work completion report, daily report, etc.

3.2 Period subject to investigation

From May 1, 2016 to May 31, 2018

3.3 No. of units subject to investigation

569 units (cumulative)

3.4 Results of investigation (details of improper activities, number of places of business and number of units)

Details of improper activities	Number of places of business and number of units for which improper activities were conducted	
Implementation of dismantling and maintenance work in maintenance factories not certified by the government	SCMS	29 out of a total of 32 places of business, 87 units
	Parks Koushinetsu Co., Ltd.	3 out of 4 places of business in total, 19 units
	SK Ishisho K.K.	3 out of a total of 6 places of business, 3 units
Implementation of improper dismantling and maintenance work in maintenance factories certified by the government (i) Implementation of dismantling and maintenance work in places other than certified workplaces (ii) Non-issuance of record books for dismantling and maintenance work	SCMS	22 out of a total of 22 places of business, 135 units (Note 1)

(Note 1) The number of places of business and the number of units for which improper activities were conducted indicate the number of places of business and the number of units for which activities described in either (i) or (ii) were detected

3.5 Laws, regulations, etc. related to improper activities

Article 49 (Dismantling and maintenance), Article 78 (Certification of automobile dismantling and maintenance business) and Article 91 (Record book for dismantling and maintenance) of the Road Transport Vehicle Act, and other regulations

4. Implementation of safety checks in certified factories

As for all large special vehicles that underwent dismantling and maintenance work in non-certified maintenance factories, safety checks have already been implemented in certified factories.

5. Start time of improper activities

We could not identify when the improper activities were started, but some stated that they had been conducted since the 1990s or so. Thus, we assume that they had been conducted for a long time.

6. Causal analysis of the improper activities

To conduct dismantling and maintenance work (defined under Article 49 (Dismantling and maintenance) of the Road Transport Vehicle Act) for asphalt pavers, etc. that fall under large special vehicles, it is necessary for a factory with a certification for the automobile dismantling and maintenance business under Article 78 of the same act to conduct such work. However, in this respect, the following were lacking: knowledge on the Road Transport Vehicle Act and education on the act; thorough dissemination of the content of laws and regulations; instructions for compliance with laws and regulations; and operation management.

7. Recurrence prevention measures

(i) Strengthening of functions of the head office

Functions of the head office have been strengthened and the Industry Law Compliance Promotion Committee has been established. With respect to compliance of laws and regulations required for business operations (industry laws), etc. such as the Road Transport Vehicle Act and the Industrial Safety and Health Law, the Industry Law Compliance Promotion Committee endeavors to enhance compliance by checking how a framework is established, education is promoted and compliance is ensured.

Furthermore, the CS Operation Management Group has been established in the Customer Support Department and will promote appropriate service operations.

(ii) Development of regulations, manuals, etc. for dismantling and maintenance

Criteria for interpreting the definition of dismantling and maintenance of large special vehicles and judging what parts are subject to dismantling and maintenance work have been developed to clarify judgment criteria for dismantling and maintenance work. Simultaneously, work regulations for dismantling and maintenance and a maintenance work manual that covers processes from receipt of request for repairs to maintenance completion have also been developed. A ledger for recording dismantling and maintenance work has been prepared to clarify management of dismantling and maintenance work.

The work regulations clarify roles and responsibilities of the supervisory manager at the head office, administration manager of the supervisory department, administration manager of certified factory, etc. with respect to dismantling and maintenance, and also clarify rules for conducting dismantling and maintenance work properly.

If recall work is ordered, it should be clarified in a written improvement work instruction whether or not the part subject to the recall falls under any of the portions covered by the definition of dismantling and maintenance.

(iii) Implementation of management of dismantling and maintenance operations

With respect to all dismantling and maintenance work in each place of business, operations have been managed as follows: a ledger for recording dismantling and maintenance work has been prepared, completion has been checked by the chief maintenance staff, and certified factories of contractors have been checked, and then the results thereof have been reported to the management department for confirmation on a weekly basis. It should be noted that this operation management is scheduled to shift to management through the maintenance order receipt/sales system (which is currently being modified) in April 2019.

(iv) Promotion of acquisition of certification

With respect to factories that have not been certified, systematically proceed with acquisition of certification for the automobile dismantling and maintenance business and

develop a dismantling and maintenance system within their own company.

(v) Outsourcing of work to appropriate certified factories

If dismantling and maintenance work is outsourced to an outside certified factory, check the appropriateness of the certified factory before outsourcing the work.

(vi) Implementation of education on compliance and other matters

Education on the Road Transport Vehicle Act and related laws and regulations has been provided to all employees at all sites. E-learning for ensuring compliance and education for ensuring compliance (industry law compliance education including dismantling and maintenance work) at workshops targeting site managers and factory managers across the nation will continue to be implemented in the future as well.

At each site, the factory manager is to provide education for complying with industry laws including dismantling and maintenance work.

(vii) Implementation of internal audits

Each year, an internal audit is to be conducted by the administration manager of the supervisory department based on the established work regulations and the internal audit list. In addition, with respect to a site audit conducted by the audit department of SCM once every two years, an audit of dismantling and maintenance work is to be conducted.

End

Improper specific self-inspections conducted at SCMS

1. Overview of applicable businesses

1.1. Description of subject products and work for which improper activities were conducted

Specific self-inspection work for hydraulic excavators, forklifts, bulldozers, tractor shovels, machinery for foundation work, pavement compaction machines, aerial work platforms, etc.

1.2. Intended applications of products

Construction and civil engineering work, roadwork, and work at sites of material handling within premises

1.3. Amount of sales for subject products and work (fiscal 2017)

Sales: 270,000,000 yen (proceeds related to specific self-inspections)

2. How the improper activities were detected

After improper activities in specific self-inspections within the Group in July 2018, we conducted an internal investigation and detected sections for which no measurements were taken.

3. Results of investigation into the improper activities

3.1. Investigation method:

With respect to measurement items in the specific self-inspection record sheet, a survey of examiners regarding the actual state of measurement has been conducted.

3.2. Period subject to investigation: From August 1, 2017 to July 31, 2018

3.3. No. of units subject to investigation: 10,715 units

3.4 Results of investigation (details of improper activities, number of places of business and number of units):

Details of improper activities	Number of places of business and number of units for which improper activities were conducted	
As for a part of inspection items for specific self-inspections, measurements were not taken, and reference values, etc. were entered in the specific self-inspection record sheet.	SCMS	46 out of a total of 53 places of business, 2371 units
	Parks Koushinetsu Co., Ltd.	4 out of a total of 4 places of business, 289 units
	SK Ishisho K.K.	6 out of a total of 6 places of business, 675 units
	Osaka Sumijukenki Co., Ltd.	2 out of a total of 2 places of business, 566 units

3.5 Laws, regulations, etc. related to improper activities:

Various guidelines for regular self-inspections based on Article 45, Paragraph 2 (Specific self-inspection, registered inspection agency) and Paragraph 3 (Guidelines for regular specific self-inspections) of the Industrial Safety and Health Act and the Ordinance on Industrial Safety and Health

4. Taking of measurements for sections where no measurements were taken

With respect to vehicles for which we found this time that no measurements were taken for in specific self-inspections, measurements have already been taken for all sections where no measurements were taken.

5. Start time of improper activities

We could not identify when the improper activities were started, but some stated that they had been conducted since the 1990s or so. Thus, we assume that they had been conducted for a long time.

6. Causal analysis of the improper activities

- (i) Because education on specific self-inspections was insufficient, examiners and managers at places of business did not have a sufficient understanding of guidelines for regular self-inspections.

Due to this, although there were several inspection methods that could be used for the same section, other inspection methods were used to check the section, and measurements were not taken for a part of measurement items in some cases.

- (ii) Due to technical innovations, changes in structures and mechanisms of machinery, restraints on inspection sites, etc. and other circumstances, there were inspection items for which it was impossible or difficult to take measurements.

- (iii) In internal audits, inspection implementation items and descriptions in the inspection record sheet were checked, but in-depth checks were not made on whether measurements were actually taken or whether actual measurement values were correctly entered.

7. Recurrence prevention measures

- (i) Provision of internal instruction as an urgent program

Company-wide instruction on the content of guidelines for regular self-inspections and actual measurement items and actual measuring method based on the guidelines has been provided as an urgent program. In addition, instruction on the method of managing specific self-inspections has been provided to each administration manager as an urgent program.

- (ii) Strengthening of functions of the head office

Functions of the head office have been strengthened and the Industry Law Compliance Promotion Committee has been established. With respect to laws and regulations required for business operations (industry laws), etc. such as the Road Transport Vehicle Act and the Industrial Safety and Health Law, the Industry Law Compliance Promotion Committee strives to ensure compliance by checking how a framework is established, education is promoted and compliance is ensured.

Furthermore, the CS Operation Management Group has been established in the Customer Support Department and will promote appropriate service operations.

- (iii) Ensuring consistency between inspection methods and recording methods based on guidelines for regular self-inspections

Specific self-inspections are thoroughly conducted in accordance with guidelines for regular

self-inspections for each piece of machinery.

In addition, implementation of prescribed inspections in accordance with inspection manuals and maintenance standards prepared by the Safety Association of Construction and Loading Vehicles, a public interest incorporated association (hereinafter “SACL”) has been promoted. With respect to the inspection record sheet, it has been decided to enter records in the record sheet issued by SACL, and consistency has also been ensured for the method of recording measurement results.

As for inspections of forklifts, inspection and measurements are to be implemented in accordance with the Inspection and Measurement Implementation Guidelines: Specific Self-inspections.

(iv) Appropriate management of inspection equipment

In the guidelines for managing inspection equipment, the standards for always keeping inspection equipment in each place of business have been clarified, and inspection equipment is to be inspected based on the inspection equipment ledger in each place of business once every three months as a general rule.

(v) Implementation of education on compliance and other matters

The contents of internal education such as the content of guidelines for regular self-inspections for each piece of machinery, inspection methods, the method of making entries in the record sheet, etc. have been unified, and education has been provided to managers of places of business and examiners.

The Specific Self-inspection Education Regulations are to be formulated, examiners and managers are systematically required to receive external training held by SACL, and the education/training record sheet is to be used to manage education records.

Furthermore, e-learning for ensuring compliance and education for ensuring compliance (industry law compliance education including specific self-inspections) at workshops targeting site managers and factory managers across the nation will continue to be implemented.

At each site, the factory manager is to provide education for complying with industry laws including specific self-inspections.

(vi) Improvement of internal audits

It has been decided to conduct an internal audit once a year with the General Manager of the Customer Support Department acting as the supervisory manager of inspection work audits, and an internal audit system has been developed. In addition, the contents of internal audits have been improved (with the following items added: management of education records, management of inspection equipment, interview of examiners about the state of measurements, etc.).

In addition, with respect to a site audit conducted by the audit department of SCM once every two years, an audit of specific self-inspections is to be conducted.

8. Regular self-inspection of mobile cranes

In the course of investigation into specific self-inspections, it was confirmed that a part of loading tests were not carried out in regular self-inspections of mobile cranes. In that regard, test weights for inspections are currently being prepared, and as soon as the preparation is complete, loading tests will be conducted successively after an explanation is provided to customers.

End

Improper dismantling and maintenance of large special vehicles at Nacco Sales

1. Overview of applicable businesses

1.1 Description of subject products and work for which improper activities were conducted

Dismantling and maintenance of engine-powered forklifts that fall under large special vehicles (with a vehicle inspection number plate)

1.2. Intended applications of products

Forklifts: Used for material handling work in production factories, warehouses, delivery centers, etc.

1.3. Amount of sales of subject products (fiscal 2017)

Sales: 30,000,000 yen (proceeds related to dismantling and maintenance of large special vehicles for the Japanese market)

2. How the improper activities were detected

We received the *Kokujisei* Notice No. 38 “Appropriate Implementation of Dismantling and Maintenance Work” dated as of April 24, 2018 from the Architecture and Building Engineering Division of the Road Transport Bureau of the Ministry of Land, Infrastructure, Transport and Tourism, requesting us to disseminate and thoroughly implement dismantling and maintenance work in certified factories (maintenance companies certified by the government) in accordance with the Road Transport Vehicle Act. As such, we conducted a detailed survey on the implementation status of dismantling and maintenance work at Nacco Sales and other maintenance sites for large special vehicles and as a result, improper activities were detected in relation to the dismantling and maintenance work.

3. Results of investigation into the improper activities

3.1 Investigation method

An investigation was conducted into places where maintenance work was conducted, details of maintenance work, presence/absence of record books, etc. at places of business where maintenance work was conducted for subject vehicles.

3.2 Period subject to investigation

From May 1, 2016 to April 30, 2018

3.3 No. of units subject to investigation

226 units

3.4 Results of investigation (details of improper activities, number of places of business and number of units)

Details of improper activities	Number of places of business and number of units for which improper activities were conducted	
Implementation of dismantling and maintenance work in maintenance factories not certified by the government	Sumitomo NACCO Forklift Co., Ltd.	1 out of a total of 1 place of business, 6 units
	Nacco Sales	29 out of a total of 31 places of business, 94 units
	Tohoku Shinko Co., Ltd.	1 out of a total of 3 places of business, 2 units
Implementation of improper dismantling and maintenance work in maintenance factories certified by the government (i) False issuance of record books for dismantling and maintenance work conducted in a non-certified factory (ii) Implementation of dismantling and maintenance work in places other than certified workplaces (iii) Non-issuance of record books for dismantling and maintenance work	Nacco Sales	9 out of a total of 9 places of business, 130 units (Note 1)

(Note 1) The number of places of business and the number of units for which improper activities were conducted indicate the number of places of business and the number of units for which activities described in either (i), (ii) or (iii) were detected

3.5 Laws, regulations, etc. related to improper activities

Article 49 (Dismantling and maintenance), Article 78 (Certification of automobile dismantling and maintenance business) and Article 91 (Record book for dismantling and maintenance) of the Road Transport Vehicle Act, and other regulations

4. Implementation of safety checks in certified factories

As for all vehicles that underwent dismantling and maintenance work in non-certified maintenance factories, safety checks have already been implemented in certified factories.

5. Start time of improper activities

We could not identify when the improper activities were started, but some stated that they had been conducted since the 1990s. Thus, we assume that they had been conducted for a long time.

6. Causal analysis of the improper activities

To conduct dismantling and maintenance work (defined under Article 49 (Dismantling and maintenance) of the Road Transport Vehicle Act) for forklifts, etc. that fall under large special vehicles (with a car inspection number plate), it is necessary for a factory with a certification for the automobile dismantling and maintenance business under Article 78 of the same act to conduct such work. However, in this respect, the following were lacking: knowledge and education on the same act; thorough dissemination of the content of laws and regulations; instructions for compliance with laws and regulations; and operation management.

7. Recurrence prevention measures

(i) Emergency measures

Education on the Road Transport Vehicle Act was provided to all sales and service personnel as an urgent program, top management made the rounds to all sales offices, and awareness-raising campaign activities targeting all employees were implemented to raise their awareness of compliance.

(ii) Development of work standards for dismantling and maintenance

Work standards for dismantling and maintenance of large special vehicles have been formulated so that work can be conducted in accordance with laws and regulations. In addition, to clarify judgment criteria for dismantling and maintenance of large special vehicles, target sections and the definition of dismantling and maintenance have been clarified in the work standards.

(iii) Implementation of education

To continually provide education for the purpose of maintaining and improving the abilities of service managers and service people, service education standards have been established and education plans are to be prepared and implemented in accordance with such standards. In addition, as for the results of such education, education records are to be prepared and managed.

(iv) Promotion of acquisition of certification

With respect to factories that have not been certified, systematically proceed with acquisition of certification for the automobile dismantling and maintenance business and develop a dismantling and maintenance system within their own company.

(v) Implementation of internal audits

To check that dismantling and maintenance work for large special vehicles is conducted appropriately, audit criteria for dismantling and maintenance work are to be created and the Customer Support Department is to implement internal audits.

End

Improper specific self-inspections conducted at Nacco Sales

1. Overview of applicable businesses

1.1 Description of subject products and work for which improper activities were conducted

Self-inspection work for forklifts, aerial work platforms and vehicle-type construction machinery

1.2 Intended applications of products

Forklifts: material handling work

Aerial work platforms: Work at height

Vehicle-type construction machinery: transportation of soil and sand

1.3 Amount of sales of subject products (fiscal 2017)

Sales: 2,300,000,000 yen (proceeds related to specific self-inspections)

2. How the improper activities were detected

During a detailed investigation into the fork breakage that occurred when a customer conducted forklift operations, it was found that in a specific self-inspection of the forklift, the fork thickness was not measured and a reference value was recorded.

For this reason, we investigated whether inspections were properly conducted for all measurement items of specific self-inspections in all places of business. As a result, it was found that there were similar cases where measurements were not taken.

3. Results of investigation into the improper activities

3.1 Investigation method:

With respect to measurement items in the specific self-inspection record sheet, a survey of examiners regarding the actual state of measurement has been conducted.

3.2. Period subject to investigation: From July 1, 2017 to June 30, 2018

3.3. No. of units subject to investigation: 28,225 units

3.4 Results of investigation (details of improper activities, number of places of business and number of units):

Details of improper activities	Number of places of business and number of units for which improper activities were conducted	
As for a part of inspection items for specific self-inspections, measurements were not taken, and reference values, etc. were entered in the specific self-inspection record sheet	Nacco Sales	40 out of a total of 40 places of business, 27,060 units
	Tohoku Shinko Co., Ltd.	3 out of a total of 3 places of business, 1,165 units

3.5 Laws, regulations, etc. related to improper activities :

Various guidelines for regular self-inspections based on Article 45, Paragraph 2 (Specific self-inspection, registered inspection agency) and Paragraph 3 (Guidelines for regular specific self-inspections) of the Industrial Safety and Health Act and the Ordinance on Industrial Safety and Health

4. Taking of measurements for sections where no measurements were taken

With respect to vehicles for which we found this time that no measurements were taken for in specific self-inspections, measurements have already been taken for all sections where no measurements were taken.

5. Start time of improper activities

We could not identify when the improper activities were started, but some stated that they had been conducted since the 1990s. Thus, we assume that they had been conducted for a long time.

6. Causal analysis of the improper activities

- (i) Because education on specific self-inspections was insufficient, examiners and managers at places of business did not have a sufficient understanding of guidelines for regular self-inspections.

Due to this, although there were several inspection methods that could be used for the same section, other inspection methods were used to check the section, and measurements were not taken for a part of measurement items in some cases.

- (ii) Due to technical innovations, changes in structures and mechanisms of machinery, restraints on inspection sites, etc. and other circumstances, there were inspection items for which it was impossible or difficult to take measurements.
- (iii) In internal audits, inspection implementation items and descriptions in the inspection record sheet were checked, but in-depth checks were not made on whether measurements were actually taken or whether actual measurement values were correctly entered.

7. Recurrence prevention measures

- (i) Provision of education on laws and regulations and training for practical skills as urgent programs

Education on laws and regulations and training for practical skills in relation to inspection implementation guidelines were provided to all service people as urgent programs. In addition, top management made the rounds to all sales offices, and awareness-raising campaign activities targeting all employees were implemented to raise their awareness of compliance.

- (ii) Development of operation manuals, etc.

To ensure appropriate implementation of inspections, “Specific Self-inspections: Inspection Procedures and Judgment Criteria” has been formulated. In addition, to keep evidence of appropriate implementation of inspections with respect to inspection items for which measurements need to be taken, the “Specific Self-inspection Measurement Record Preparation Standards” has been developed.

- (iii) Appropriate management of inspection equipment

The “Standards for an Appropriate Number of Pieces of Inspection Equipment” has been revised as guidelines for keeping an appropriate number of pieces of inspection equipment at each place of business, and additional inspection equipment has been supplied to cover a shortfall of the equipment. In addition, inspection equipment is to be inspected each month, and inspection results are to be entered in the inspection equipment ledger.

(iv) Implementation of education

To develop human resources and improve abilities of examiners with the aim of maintaining an appropriate inspection system, “Specific Self-inspections: Examiner Education Standards” has been formulated as regular education standards for service managers and service people. Based on the formulated education standards, education plans are to be formulated and implemented.

(v) Strengthening of internal audits

To take measurements reliably in internal audits for specific self-inspections and check that inspection records are created and kept, the “Specific Self-inspections: Internal Audit Standards” has been revised. In line with this, the “Work Inspections/Instruction List” and the “Audit Manual” have been revised.

End

Improper inspections of mill rolls, etc. at HMX

1. Improper inspections of mill rolls

1. Overview of applicable products

1.1 Subject products for which improper activities were conducted
Hot rolling work rolls

1.2 Intended applications of products

A kind of consumable product used for metallic rolling equipment that is production equipment used when producing steel products at steel manufacturers using blast, electric or other furnaces.

1.3 Facilities/equipment using the subject products

Steel works with metallic rolling equipment

1.4 Amount of sales of subject products (fiscal 2017)

Sales: 2,900,000,000 yen

2. How the improper activities were detected

The improper activities were detected in an internal investigation conducted in response to the disclosure by another company of facts to the public.

3. Results of investigation into the improper activities

3.1 Investigation method

Certificates of analysis submitted to customers were checked against actual inspection results (raw data).

3.2 Period subject to investigation

From April 1, 2015 to September 30, 2018

3.3 No. of cases subject to investigation

11,214 cases

3.4 Results of investigation (details of improper activities, number of customers and number of cases)

Details of improper activities	Number of customers and number of cases for which improper activities were conducted (Note 1)
<p>(i) If measurement values of hardness, components and outer shell layer thickness deviated from specifications, such values were rewritten in certificates of analysis so that they were within the scope of specifications.</p> <p>(ii) With respect to a micrograph of metal texture attached to certificates of analysis, a micrograph of not the product inspected but another product consisting of the same material was attached.</p> <p>(iii) With respect to mechanical characteristic values such as tensile strength, elongation and impact values of the body and axis of mill rolls, mechanical characteristic values or catalog values of the product inspected but another product consisting of the same material were entered in certificates of analysis.</p>	<p>65 domestic and overseas companies, 9,457 cases</p>

(Note 1) The number of customers and the number of cases for which improper activities were conducted indicate the number of customers and the number of cases for which any of the activities above was detected

3.5 Laws, regulations, public standards, etc.

related to improper activities.

Not applicable.

4. Start time of improper activities

We could not identify when the improper activities were started, but some stated that they had been conducted more than 40 years ago. Thus, we assume that they had been conducted for a long time.

5. Causal analysis of the improper activities

(i) Diminishing awareness of compliance with customers' specifications

As a result of a priority being given to delivery records and product performance, employees had a misguided confidence in the quality and normally judged that there would be no problem in using products. Personnel were not fully aware of the necessity of meeting customers' specifications as a part of a contract, and there were problems in processes for agreeing on specifications and recording the receipt of orders.

(ii) Insufficient efforts to work on technical issues

Personnel agreed on specifications that went beyond their process capacity and received orders, although an in-house study on technical aspects and discussion with customers were

insufficient. As a result of continuing to manufacture products with a priority given to delivery records, continuous efforts for analyzing technical aspects of actual cast products (such as out-of-specification data on hardness and components and variances in actual products) and reflecting the findings in specifications agreed on with customers concerning the next products were insufficient. Efforts for improving precision of the inspection measurement system in relation to measurements of hardness and chemical components were insufficient.

(iii) Organizational management that fails to strike a balance

Amid the calls for short lead time, products were manufactured with a priority given to production efficiency over compliance with specifications of individual products. As a result of adopting a system with the minimum number of personnel, investments were not made in necessary human resources such as technical and inspection personnel and a necessary personnel system was not maintained, leading to an insufficiency of human resources. Under these circumstances, fixed allocation of staff in certain positions occurred and personnel in each position did not sufficiently perform their role according to the functions of each position.

There was an insufficiency of activities where related divisions work together to respond to customers, satisfy customers' specifications and increase customer satisfaction.

(iv) Vulnerable QMS

As for inspections and measurements at each workplace, a system was in place where results of measurements for inspection items were subject to manual intervention, which means that inspection results could be rewritten, resulting in the inspection measurement system being vulnerable.

Although DR sessions and tollgates are in place, the QMS had been formalized or became a dead letter and did not perform its intended functions. The technical division is required to properly judge whether a product is acceptable or not based on inspection records, and additionally the quality assurance division is required to make a final judgment on whether the product is acceptable or not based on the judgment of the technical division. However, the technical division did not judge the acceptability properly and deemed an out-of-specification product to be within the scope of specifications. In addition, the quality assurance division rewrote inspection data that were out of specifications, at its own discretion or based on the judgment of the technical division. In the quality assurance division, there were weak supervisory functions performed by superiors, etc., who only gave a final approval to certificates of analysis, and there was no system where superiors supervise work in the middle of the inspection process.

Internal audits were also conducted superficially, and in particular the general manager of the quality assurance division (the person responsible for the quality assurance function) themselves approved falsified inspection data, which means that independence of the quality assurance division from other divisions was not ensured and it did not perform its functions to monitor and keep work in check.

(v) Issues related to executive team and managerial-level personnel

The executive team and managerial-level personnel did not have a sufficient understanding of the actual state of on-site quality assurance practices and left the quality issue to the hands of field workers. Although improper incidents related to quality occurred at other companies, the executive team and managerial-level personnel were not fully aware of risks related to quality, did not investigate the actual situation of the company, and were overconfident without any grounds that "there is no problem with our company," which resulted in a delay in detection of improper activities conducted for many years.

6. Recurrence prevention measures

(i) Top management exhibiting its leadership to promote company-wide quality assurance efforts

The quality policy has been completely overhauled, and information on the new policy has been disseminated to all employees. Top management itself endeavors to ensure awareness of compliance with laws and regulations, importance of quality and commitment to customers among all employees.

(ii) Establishment of a quality assurance system

The Quality Assurance Group was reorganized on February 1, 2019 to form the Quality Assurance Department, and a person was invited from another division of the Sumitomo Heavy Industries Group to assume the position of general manager of that department, thereby establishing a quality assurance system that ensures independence of the department from other divisions. Additionally, efforts are to be made to ensure personnel rotations and develop human resources in order to prevent closed organizational management.

(iii) Verification of the content of contracts

When exchanging information on product specifications, executing a contract or receiving an order, process capacity is to be ascertained properly with the aim of accepting the order taking into account the process capacity by examining whether it is possible to reliably manufacture and deliver products that can satisfy requirements of the customer.

(iv) Improvement of manufacturing process

a. Strengthening of gate before starting manufacturing

When a molding plan is prepared, the general manager of the manufacturing department or his/her representative checks a customer's specifications against a casting plan.

b. Clarification of process-specific gates

Develop standards and procedures, clarify judgment of whether it is acceptable or not in each process, and ensure compliance.

c. Monitoring of processes

Register additional procedures, processes and ledgers in the quality manual and maintain and manage them.

(v) Improvement of the reliability of inspection data

a. Improvement of inspection/measurement equipment and measuring methods

Digitize chemical component analyzers and provide the automatic data collection function in them. Upon discussion with customers, revisions to requirements for measuring hardness are to be reflected successively in the standards and procedures for eliminating factors for variances in measurements of Shore hardness.

b. Management of records

Establish rules for managing and keeping inspection data and build a system where inspection records can be kept as objective facts and evidence.

c. Prevention of rewriting of inspection data

If recording of inspection data involves hand operation, measures to prevent erroneous entries, such as double-checking, are to be taken. In the future, introduce mechanisms such as a system for automatically recording inspection results.

d. Maintenance of measurement equipment

Take inventory of measurement equipment, identify measurement equipment that needs to be

possessed and ascertain the status of such equipment. In addition, make a list of measurement equipment to be managed, and formulate and implement standards and procedures so that such equipment is always kept in good condition.

(vi) Handling of non-conforming products

a. Reporting of non-conforming products to the general manager of the quality assurance department

When detecting non-conforming products, make a report to the general manager of the quality assurance department and promptly take measures such as stopping processes, shipments, etc.

b. Measures to prevent shipments of non-conforming products

To prevent non-conforming products to be shipped mistakenly, ID management standards are to be created and a management system is to be established.

c. Establishment of rules for handling non-conforming products

Formulate handling rules such as re-inspection of non-conforming products, special adoption, disposal (spoilage), etc., and endeavor to ensure that the rules are implemented.

(vii) Corrective measures and preventive measures

a. Corrective measures

Re-build mechanisms and rules for processes from causal investigation of defects or any non-conforming product to responses and correction.

b. Preventive measures

Utilize process capacity and other data analysis results for daily improvement activities, etc. and prevent occurrence of defects and non-conformance. In addition, introduce quality risk management and implement quality risk reduction measures.

(viii) Investments in improvement of process capacity

Jointly conduct research with the Corporate Technology Management Group of the Company with respect to technical issues such as review of quantitative characteristics of each catalog material, relations between chemical components and heat treatment, etc. In line with this, make investments in improvement of necessary equipment, maintenance of inspection equipment, and improvement of inspection work environments.

(ix) Improvement of abilities of the quality assurance division

a. Improvement of abilities of examiners at the quality assurance division

Assign personnel with appropriate skills to the position of examiners at the quality assurance division. Build a mechanism to check their skill levels through skill evaluation or ability evaluation.

b. Improvement of abilities of managers at the quality assurance division

Regularly provide education to maintain and improve abilities of managers at the quality assurance division.

(x) Enhancement of internal audits

a. Development of internal audit personnel

Develop internal audit personnel to build a system to enable conducting internal audits according to the rules.

b. Revision of internal audit processes

Conduct checks on raw data and short notice inspection of documents in order to improve effectiveness of internal audits.

(xi) Evaluation of QMS by external parties

a. Early re-acquisition of ISO9001 certification

Aim to re-acquire ISO9001 certification early.

b. Product quality subject to regular audits by the Corporate Quality Group of Sumitomo Heavy Industries

Not only conduct internal audits but also receive regular quality audits by the Corporate Quality Group of Sumitomo Heavy Industries so that the quality is subject to external evaluation, thereby establishing a system to enable implementing the QMS systematically according to rules.

(xii) Promotion of education

Provide education on responsibility toward customers, social responsibility, etc. for compliance related to quality (in particular, importance of quality, quality management and quality assurance which must be guaranteed by own products, including purposes of use, characteristics, etc. of the company's own products).

II. Improper inspections of chain-manufacturing products

1. Overview of applicable products

1.1 Subject products for which improper activities were conducted

Chain-manufacturing products (chains, and metal pieces for underwater connection)

1.2 Intended applications of products

Chains and metal piece for underwater connection are used to connect marine structures, etc. with weights.

1.3 Amount of sales of subject products

(fiscal 2017)

Sales: 400,000,000 yen

2. How the improper activities were detected

When approving a certificate of analysis, the new general manager of the quality assurance department who assumed the position in February 2019 checked raw data related to the certificate of analysis and then found that a proof test had not been conducted. Thereafter, a detailed investigation into chain-manufacturing products was conducted and as a result, a series of improper activities were detected.

3. Results of investigation into the improper activities

3.1. Investigation method:

Certificates of analysis submitted to customers were checked against internal inspection records.

3.2. Period subject to investigation :

From April 1, 2016 to February 28, 2019

3.3. No. of cases subject to investigation :

728 series of chains and 3,252 metal pieces for underwater connection

3.4. Results of investigation (details of improper activities, number of customers and number of cases):

Details of improper activities	Number of customers and number of cases for which improper activities were conducted (Note 2)
<p>As for certificates of analysis (including attached materials), the following improper activities were conducted.</p> <p>(i) Although proof tests were not conducted, “good” was entered in the “Inspection result” section for all products.</p> <p>(ii) Although the results of tensile and impact tests described in mill test reports should have been entered, estimates based on actual measurements of hardness of products were entered.</p> <p>(iii) Although tensile and impact tests should have been conducted, such tests were not conducted and estimates based on actual measurements of hardness of products were entered. In addition, chemical components were not entered for all products.</p> <p>(iv) After tensile tests were conducted, a part of values that deviated from customers’ specifications were rewritten so that they were within the scope of the specifications.</p> <p>(v) In dimension inspection records, dimensions for relevant products and dimensions for irrelevant products were entered in a mixed manner, and data that deviated from customers’ specifications were rewritten so that they were within the scope of specifications.</p> <p>(vi) With respect to values obtained from impact tests, inspection data for which the tests were not conducted were added. In addition, such values were rewritten so that they were within the scope of specifications.</p> <p>(vii) In dimension inspection records, dimension data for relevant products that deviated from customers’ specifications were rewritten so that such data were within the scope of specifications.</p>	<p>2 customers</p> <p>548 series of chains</p> <p>Metal pieces for underwater connection</p> <p>1,325 pieces</p>

(Note 2) The number of customers and the number of cases for which improper activities

were conducted indicate the number of customers and the number of cases for which any of the activities in (i) to (vii) above was detected

3.5 Laws, regulations, public standards, etc. related to improper activities.

Some products do not comply with inspection rules of Nippon Kaiji Kyokai (NK).

4. Start time of improper activities

We could not identify when the improper activities were started, but it is inferred that some improper activities were already conducted in April 2008 when HMX performed an absorption-type merger with Shin Nippon Chain & Machinery Co., Ltd.

5. Causal analysis of the improper activities

- (i) Although the practice of non-implementation of proof tests was taken over between past inspection personnel. Inspection personnel mistakenly recognized that after a proof test, a cutting test (with the presence of a customer) was conducted with the load being two times as large as that for the proof test, and because the product passed the cutting test, there was no need to implement a proof test.
- (ii) Improper activities not related to proof tests were conducted due to the fact that as a result of factors such as relevant operations being left in the hands of inspection personnel or the predecessor in charge of relevant operations not providing sufficient information to the successor, inspection personnel made wrong assumptions and conducted the improper activities such as entering estimated values, rewriting out-of-specification values, rewriting inspection data of products for which tests were not conducted, etc.
- (iii) Superiors were not aware of the actual situation of relevant inspection operations and did not manage and supervise the operations sufficiently.
- (iv) Chain-manufacturing products were left in the hands of the relevant division and top and senior managers did not have involvement or perform management or supervision sufficiently.
- (v) Although managers at the quality assurance division approved certificates of analysis, they did not do checks, for example by checking inspection results against raw data.

6. Recurrence prevention measures

Implement recurrence prevention measures described in “I. Improper inspections of mill rolls” and also implement the following measures to prevent the recurrence of the improper activities.

- (i) Ensuring strict compliance with customers’ specifications
 - Ensure to follow production instructions and inspection instructions based on a reliable understanding of the content of customers’ specifications.
- (ii) Overhaul of inspection items and discussions with customers
 - Inspection items described in specifications are to be overhauled, and inspection items that need to be revised are to be discussed with customers.
- (iii) Reflection of descriptions of specifications in QC process chart and clarification of measures to handle abnormalities
 - To properly perform production and inspection according to the content of customers’ specifications, descriptions of customers’ specifications are to be properly reflected in the QC process chart, and if there is any abnormality, strict measures to handle abnormalities are to be taken without delay.
- (iv) Establishment of rules for making all documents regarding quality assurance traceable
 - With storage of purchased items including steel materials, management of mill test reports,

identification and management of inventories, etc., all documents regarding quality assurance are to be managed by determining standards and procedures to make such documents traceable. In addition, to ensure that such management tasks are performed, standards and procedures for managing purchased items and outsourced items are to be revised.

III. Improper inspections of surface treatment products

1. Overview of applicable products

1.1 Subject products for which improper activities were conducted, and intended applications of such products

Surface treatment products (rollers): rollers that are a kind of consumable product used for mills and conveyors for manufacturing steel products, etc. and that are made abrasion-resistant and corrosion-resistant by using the plasma spraying method (Note 3), the powder HIP (Note 4) forging method, etc.

(Note 3) A spraying method to form a film by taking the following procedures: powder-state spray materials are fed in high-temperature and high-speed plasma jets that are generated by direct current arc discharge so that melting and acceleration are performed.

(Note 4) HIP is the abbreviation of Hot Isostatic Pressing and this is one of the material processing methods where gas pressure is used to apply isotropic pressure to the object to be processed

1.2 Amount of sales of subject products

(fiscal 2017)

Sales: 150,000,000 yen

2. How the improper activities were detected

Because improper activities were found for chain-manufacturing products as described in II. above, inspection record sheets submitted to customers were again checked against inspection records containing raw data. As a result, activities such as rewriting of inspection data in dimension inspections were detected.

3. Results of investigation into the improper activities

3.1. Investigation method:

Inspection record sheets submitted to customers were checked against inspection records containing raw data.

3.2. Period subject to investigation :

From April 1, 2016 to February 28, 2019

3.3. No. of rollers subject to investigation :

2,290 rollers

3.4. Results of investigation (details of improper activities, number of customers and number of rollers):

Details of improper activities	Number of customers and number of rollers for which improper activities were conducted (Note 5)
<p>As for certificates of analysis, the following improper activities were conducted.</p> <p>(i) If a dimension test revealed that a tolerance shown in a technical drawing was not met, inspection data were rewritten.</p> <p>(ii) As for hardness, a format of certificate of analysis was created to describe measurement results for all products due to past circumstances. However, measurements were not taken for all products and the results of sampling tests were also entered for products for which no measurements were taken. Otherwise, actual past measurement values, etc. were entered without conducting any hardness test.</p> <p>(iii) With respect to ultrasonic inspections that were not conducted because of the impossibility of effective inspections, falsified inspection results were entered in certificates of analysis.</p>	<p>9 companies 1,068 rollers</p>

(Note 5) The number of customers and the number of rollers for which improper activities were conducted indicate the number of customers and the number of rollers for which any of the activities in (i) to (iii) above was detected

3.5. Laws, regulations, public standards, etc.
related to improper activities.
Not applicable.

4. Start time of improper activities

We could not identify when the improper activities were started.

5. Causal analysis of the improper activities

(i) Low awareness of compliance with customers' dimension specifications

Because there were sections for which it was difficult to take accurate measurements and because there were problems such as flaws in accuracy of hardness measuring equipment and measuring tools, the personnel felt doubtful about the accuracy of dimension measurements and judged on their own that there was some tolerance for deviation from specifications. As a result, the personnel interpreted that there was no problem with rewriting values so that they were within the scope of specifications.

(ii) Insufficient discussion with customers about hardness measurements and ultrasonic inspections

With respect to hardness of base material, because heat processing, etc. of material was performed under the same conditions or because measurement of hardness was not an inspection item set forth in a customer's specifications, the personnel made the following

wrong assumptions: that there was no need to take measurements for all products and it was only necessary to enter representative values obtained in a sampling test; and that even if no measurements were taken for some products, it was OK to enter actual past measurement values.

In addition, with respect to implementation of ultrasonic inspections for some products, although the personnel were aware that because spray thickness was within a blind range, no accurate measurement could be taken, and although the personnel conducted no ultrasonic inspections, they entered values in certificates of analysis.

(iii) Insufficient efforts to improve measurement accuracy

The personnel failed to examine measures for improving measurement accuracy and the measuring methods and explain to or discuss with customers about revisions of inspection items. In addition, because there was no defect arising from relevant products in the past, the personnel did not consider the improper activities as problems.

(iv) QMS becoming a dead letter

Although managers at the quality assurance division approved certificates of analysis, they did not do checks, for example by checking inspection results against raw data.

(v) Issues about executive team and managerial-level personnel

Surface treatment products were left in the hands of the relevant division and top and senior managers did not have involvement or perform management or supervision sufficiently.

6. Recurrence prevention measures

Implement recurrence prevention measures described in “I. Improper inspections of mill rolls” and also implement the following measures to prevent the recurrence of the improper activities.

(i) Verification of instructions in technical drawings from customers

When exchanging information on drawing specifications, executing a contract or receiving an order, an order is to be accepted after examining whether it is possible to reliably manufacture and deliver products that can satisfy requirements of the customer.

(ii) Strengthening of gate before starting manufacturing

Managers are to clarify quality requirements of customers and give instructions to arrange for gauges and other measurement equipment for the purpose of selecting a processing contractor that has the required processing ability and improving measurement accuracy.

End

Improper inspections of large-size gear reducers at SHI-GB

1. Overview of applicable businesses

1.1 Description of subject products and work

for which improper activities were conducted

Large-size gear reducers

1.2 Intended applications of products

Large-size gear reducers: Gear wheel unit device that conveys power from a motor (prime mover) to a rotor

1.3 Facilities/equipment using the subject products

Gear reducers that are used for power generation equipment in waste treatment plants and sugar production plants, or that are used for various gas compressors, etc. in petrochemical plants

1.4 Amount of sales of subject products

(fiscal 2017)

Sales: approximately
1,500,000,000 yen

2. How the improper activities were detected

While the Sumitomo Heavy Industries Group made its overall effort to have a quality management overhaul, an investigation into a one-year period was conducted. As a result, it was found that internal “inspection records” containing actual measurement values in inspections before shipment of large-size gear reducers were different from values shown in “certificates of analysis” submitted to customers. As such, the incidents of improper inspections were identified.

3. Results of investigation into the improper activities

3.1. Investigation method

Internal “inspection records” containing actual measurement values in inspections before shipment of products with any of the serial numbers for the period subject to the investigation and values shown in “certificates of analysis” submitted to customers have been checked.

3.2. Period subject to investigation

From October 1, 2017 to September 30, 2018

3.3. No. of cases subject to investigation

504 cases

3.4. Results of investigation (details of improper activities, number of customers and number of cases)

Details of improper activities	Number of customers and number of cases for which improper activities were conducted (Note 1)
<p>As for certificates of analysis prepared during the internal test run, the following improper activities were conducted.</p> <p>(i) Data for bearing temperatures for which inspections were not conducted were entered.</p> <p>(ii) Actual measurements of noise that deviated from the internal reference value were rewritten to the internal reference value.</p>	7 companies, 41 cases

(Note 1) The number of customers and the number of cases for which improper activities were conducted indicate the number of customers and the number of cases for which any of the activities in (i) and (ii) above was detected

3.5. Laws, regulations, public standards, etc.
related to improper activities.
Not applicable.

4. Start time of improper activities

We could not identify when the improper activities were started.

5. Causal analysis of the improper activities

- (i) With respect to non-compliance with conditions for bearing temperatures during the internal test run, a test run time agreed on with a customer could not be secured in some cases, or personnel misinterpreted a test run time agreed on with a customer.
- (ii) With respect to rewriting of noise values, if surrounding noises cannot be shut out, accurate data cannot be obtained and due to this, personnel made a wrong assumption that it was OK to enter a value that falls within the scope of internal reference values.
- (iii) In the past quality audits, inspection records and certificates of analysis were not checked and therefore, a discrepancy between values could not be detected.

6. Recurrence prevention measures

(i) Improvement of the inspection measurement system

Automatic recording devices (vibration meter, thermometer and noise meter) have been introduced to automatically record measurement data and leave no room for personnel to conduct improper inspections, etc.

From now on, promote automatic preparation of certificates of analysis by putting measuring equipment (flowmeter, pressure gauge and recorder) into place and use such equipment to shorten the time required for processes from a test run to reporting on inspection results, thereby securing the time for a test run.

It should be noted that as measures taken during the transition period until completion of a system for automatically preparing certificates of analysis, both a reviewer and an approver at the quality assurance department check that operation inspection records are consistent

with data in certificates of analysis.

(ii) Revision of processes

Revise processes to secure a test run time.

(iii) Improvement of inspection methods in test run inspections

As measures for shutting out surrounding noise when taking measurements of noise, a noise insulation cover has been installed to shut out wind noise from couplings.

End

Improper inspections of sealing press at PMD

1. Overview of applicable businesses

1.1 Description of subject products and work

for which improper activities were
conducted

Sealing press

1.2 Intended applications of products

A part of auto molding systems used in the resin sealing process (where IC chips and wires are covered with resin and fixed) in the post-process within the semiconductor assembly process

1.3 Facilities/equipment using the subject products

Auto molding system

1.4 Amount of sales of subject products

(fiscal 2017)

Sales: approximately

1,200,000,000 yen

2. How the improper activities were detected

While the Group made its overall effort to have a quality management overhaul, and an investigation into certificates of analysis for one year in regard to inspections of conducted before shipment of sealing presses was conducted. As a result, it was found that items for which inspections were not conducted and values different from actual measurements were displayed by a program of spreadsheet software used for preparing certificates of analysis. As such, the cases of improper inspections were identified.

3. Results of investigation into the improper activities

3.1 Investigation method

(i) Inspection record sheets (checklists) have been checked against certificates of analysis to verify whether inspection items and values are consistent between the sheets and the certificates.

(ii) Calculation formulae in spreadsheet software that creates certificates of analysis have been checked.

3.2 Period subject to investigation

From November 1, 2017 to October 31, 2018

3.3 No. of cases subject to investigation

279 cases (279 units)

3.4 Results of investigation (details of improper activities, number of customers and number of cases [units])

Details of improper activities	Number of customers and number of cases (units) for which improper activities were conducted (Note 1)
<p>(i) With respect to inspections before shipment, although an inspection was not conducted for some inspection items, a fixed value falling within the scope of specifications was entered in certificates of analysis.</p> <p>(ii) Actual measurements taken in inspections were rewritten so that they were within the scope of specifications.</p>	<p>4 companies, 214 cases (214 units)</p>

(Note 1) The number of customers and the number of cases (units) for which improper activities were conducted indicate the number of customers and the number of cases (units) for which any of the activities in (i) and (ii) above was detected

3.5 Implementation of retrospective investigation

With respect to sealing presses for which improper activities were detected, a retrospective investigation into shipments of the first model in a period from September 1995 to December 2018 was conducted. As a result, similar improper activities were identified for sealing presses delivered to one division (Mechatronics Division of the Company [hereinafter “Mechatronics”]) and ten companies (2,122 cases [2,122 units]) in total including 250 cases (250 units) delivered to Mechatronics (The number of customers and the number of cases shown in “3.4. Results of investigation” above represent the numbers included in the total).

In addition, with respect to sealing presses delivered from PMD to Mechatronics, Mechatronics incorporated one or more sealing presses into an auto molding system and then shipped such auto molding systems to semiconductor manufacturers, etc. In this regard, it was found that 109 auto molding systems (delivered to 13 companies) in total (excluding systems shipped after Mechatronics confirmed in inspections before shipment that there was no problem in the systems) were shipped without recognizing that improper inspections, etc. were conducted by PMD for those 109 systems.

3.6 Laws, regulations, public standards, etc. related to improper activities.
Not applicable.

4. Start time of improper activities

It is inferred that a part of improper activities had been conducted since around 1995.

5. Causal analysis of the improper activities

- (i) A person in charge of creating spreadsheet software for preparing certificates of analysis incorporated programs in the software so that values that differ from values calculated based on input inspection data were output. Then, the software was used.

- (ii) The then personnel in charge made a wrong assumption that because actual measurements were within the scope of specifications, there was no practical problem in describing a fixed value falling within the scope of specifications in certificates of analysis.
- (iii) The personnel in charge assumed that parts were manufactured by meeting tolerance requirements shown in technical drawings, and judged that there was no problem in describing a fixed value falling within the scope of specifications in inspection record sheets.
- (iv) With respect to some inspection items, the personnel in charge assumed that there was no problem in omitting the inspection items from the viewpoint of product functions and performance, and forgot to hold discussion with customers about changes in specifications.
- (v) The quality assurance division was not aware of the improper programs created by the person in charge for spreadsheet software, and the division made use of data shown in certificates of analysis to check whether out-of-specification products were present. The division did not check such data against actual measurement values, and therefore it was not found that improper inspections were conducted.

6. Recurrence prevention measures

(i) Revision of inspection record sheets

Inspection record sheets (checklists) have been revised so that inspections are conducted properly in accordance with specifications.

(ii) Clarification of rules for revising inspection items

Inspection item additions and changes are to be made upon agreement with the customer without fail, and results of discussion with the customer are to be kept as records.

(iii) Revision of certificates of analysis

a. Inspection specifications and certificates of analysis have been confirmed with customers once again.

b. All of improper programs in spreadsheet software for preparing certificates of analysis have been corrected.

From now on, a password protection function will be provided in spreadsheet software to prevent those other than the administrators from changing the programs.

c. Describe a document number and a revision version in the format of certificate of analysis and check that the latest version is used at the time of reviewing certificates of analysis.

(iv) Improvement of approval process for certificates of analysis

When reviewing and approving certificates of analysis, numerical data are to be checked between certificates of analysis and inspection data.

(v) Revision of process for handling non-conforming products

Regulations for managing documents submitted to customers have been revised to clarify the process for reviewing and approving documents.

(vi) Revision of internal audit processes

Checking of a certificate of analysis submitted to a customer against inspection data has been added as an audit item to the audit checklist for internal audits.

End

Improper activities related to inspection results for gear reducer overhaul work at SJS

1. Overview of applicable businesses

1.1. Description of subject products and work for which improper activities were conducted

Overhaul work of gear reducers (planetary gear reducers and PARAMAX gear reducers). Overhaul work refers to the work of dismantling and inspection of gear reducers and replacement of their parts, etc. that is performed to maintain the functions of equipment, etc. and extend their service life.

1.2. Intended applications of products

Gear reducers: Gear wheel unit device that conveys power from a motor (prime mover) to a rotor

1.3. Facilities/equipment using the subject products

Planetary gear reducers: gear reducers used in driving mechanisms of ski lifts and other equipment
PARAMAX gear reducers: Gear reducers used for industrial belt conveyors, etc.

1.4. Amount of sales for overhaul of subject products

(fiscal 2017)

Sales: 900,000,000 yen

2. How the improper activities were detected

While the Sumitomo Heavy Industries Group made its overall effort to have a quality management overhaul, an investigation into a one-year period was conducted. As a result, it was found that some values were not consistent between “checklists” containing actual measurement values described at the time of overhauling gear reducers and “certificates of analysis” submitted to customers. As such, the incidents of improper inspections were identified.

3. Results of investigation into the improper activities

3.1. Investigation method

“Checklists” containing actual measurement values described at the time of overhauling gear reducers have been checked against “certificates of analysis” submitted to customers.

3.2. Period subject to investigation

From October 1, 2017 to September 30, 2018

3.3. No. of cases subject to investigation

761 cases of overhaul work during the above period

3.4. Results of investigation (details of improper activities, number of customers and number of cases):

Details of improper activities	Number of customers and number of cases for which improper activities were conducted
In prescribed inspections conducted at the time of overhauling gear reducers, actual measurements that deviated from the range of internal reference values were rewritten to an internal reference value in certificates of analysis. In addition, actual measurements that were within the range of internal reference values were rewritten to another internal reference value in certificates of analysis.	Ski lift and other equipment manufacturers: 2 companies, 8 cases Industrial belt conveyor and other equipment manufacturers: 12 companies, 20 cases

3.5. Implementation of retrospective investigation :

A retrospective investigation into a period before September 2017 has been conducted according to the request of customers, and appropriate measures have been taken based on the investigation results.

3.6. Laws, regulations, public standards, etc. related to improper activities: Not applicable.

4. Start time of improper activities

We could not identify when the improper activities were started, but it is inferred that such activities were started after customers requested measurement results in relation to internal reference values to be entered in certificates of analysis.

5. Causal analysis of the improper activities

- (i) The content of work instructions given to field workers was not necessarily clear and the instructions were not completely followed. As such, personnel judged at their discretion whether to take measurements for items for which measurements were required.
- (ii) Personnel rewrote values in certificates of analysis by making a wrong assumption that “because a customer checks performance through a test run of equipment, there is no problem with deviation from the range of internal reference values.”
- (iii) Non-thorough management of standards and processes for assuring quality led to a flaw in some divisions’ system for reviewing, approving and otherwise checking, and the system did not function.
- (iv) Regular audits of service sites did not do in-depth checks on the actual state of operational quality.
- (v) The issue that burdens were concentrated in specific service centers was left unattended.

6. Recurrence prevention measures, etc.

[Measures taken so far]

(i) Approval of certificates of analysis in the near future

Any approval of certificates of analysis in the near future is to be given by the general manager of the service supervision division or the general manager of the operation department under the service supervision division. In addition, products are shipped on the condition that a final approval has been given to measurement records that are scheduled to be submitted to a relevant customer.

(ii) Establishment of Emergency Measures Office

The Emergency Measures Office was established in Okayama Gearbox Factory on February 4 in order to centrally control the following emergency measures to respond to customers: compiling reports to customers on the investigation results; adjusting secondment plans for inspecting customers' equipment; doing the follow-up after secondment; and more.

[Recurrence prevention measures]

Recurrence prevention measures are to be taken after adequate coordination with customers is made. In addition, taking into account the state of response to customers, the measures are to be improved to make them more effective.

(i) Revision of contents, etc. of overhaul reports

Contents, etc. of overhaul reports have been revised to make them reasonable in view of the content of overhaul work, and efforts have been made to disseminate related information to employees.

(ii) Description of overhaul work conditions in documents submitted to customers

Overhaul work conditions are to be described in estimates, overhaul work reports and other documents submitted to customers so that customers can have an appropriate understanding of such conditions.

(iii) Change in format of checklist for field work

To prevent field workers from making omissions of measurement items or making errors in preparing overhaul work reports, overhaul work instructions are to be prepared according to each request of customers, measurement items are to be made clear to workers and the checklist format is to be revised so that workers do not make errors when describing measurement results.

(iv) Development of work manuals

After conducting a survey on the actual state of workplaces, develop work manuals explaining measurement methods and measurement procedures in an easy-to-understand manner, and, in the future, make efforts to automatize the overhaul work report preparation process so that tablets, etc. can be used to enter measurement results.

(v) Measures to remedy the situation where burdens are concentrated in service centers

Ascertain the status of concentration of burdens in each service center and take responsive measures after receiving technical and personnel support from SHI-GB (which manufactures gear reducers) as necessary.

(vi) Strengthening of an audit system

Conduct an internal audit of all service centers once a year in order to check that the following operations are performed properly: work in each process; description of measurement results; approval of measurement results; final transcription work; and final approval work.

(vii) Improvement in deployment, development and training of personnel

Make efforts to improve deployment, development and training of personnel by taking measures such as providing education with the aim of implementing personnel rotation internally, developing young employees and transferring skills.

End

Improper regular inspections of moving walkways at SHI-MH

1. Overview of applicable businesses

1.1 Description of subject products and work for which improper activities were conducted
Regular inspections of moving walkways

1.2 Intended applications of products

Installed in concourses of transportation facilities, public facilities and private facilities for pedestrians to move.

1.3 Amount of sales of subject products (fiscal 2017)

SHI-MH discontinued sales of moving walkways in June 2008 and thereafter only provide maintenance services (annual inspection and maintenance/service work) for already delivered equipment.

Amount of sales of maintenance services (fiscal 2017):
approximately 300,000,000 yen

2. How the improper activities were detected

While the Sumitomo Heavy Industries Group made its overall effort to have a quality management overhaul, an investigation into a one-year period was conducted. Thereafter, an additional investigation into a period dating back to fiscal 2013 was conducted. As a result, with respect to regular inspections of moving walkways, the incidents of improper inspections, such as non-qualified personnel conducting inspections, were identified.

3. Results of investigation into the improper activities

3.1 Investigation method:

Measures have been taken such as checking regular inspection reports prepared for regular inspections of moving walkways against various inspection records.

3.2. Period subject to investigation : From April 1, 2013 to November 30, 2018

3.3 No. of cases subject to investigation : 18 companies, 88 units that are in operation as of November 2018

3.4 Results of investigation (details of improper activities, number of customers and number of cases):

Details of improper activities	Number of customers and number of cases for which improper activities were conducted (Note 1)
<p>With respect to regular inspections conducted by the Company in response to requests from owners of moving walkways, the following improper activities were conducted.</p> <p>(i) Implementation of regular inspections by non-qualified personnel</p> <p>(ii) A qualified person of the Company who did not conduct an inspection entered his/her name in a regular inspection report submitted to specific administrative agencies as the name of the person who conducted the inspection.</p> <p>(iii) Information different from actual inspection results was entered in regular inspection reports.</p>	<p>3 companies, 4 units</p>

(Note 1) The number of customers and the number of cases for which improper activities were conducted indicate the number of customers and the number of cases for which any of the activities in (i), (ii) and (iii) above was detected

3.5 Implementation of retrospective investigation :

As a result of a retrospective investigation into a period after fiscal 2006, it was confirmed that with respect to regular inspections of equipment for which improper activities described in 3.4. above were identified, non-qualified personnel conducted inspections or information different from actual inspection results was entered in regular inspection reports in a period from fiscal 2007 to fiscal 2011.

3.6 Laws, regulations, etc. related to improper activities

Article 12, Paragraph 3 (Regular inspection, regular inspection report) and Paragraph 4 (Regular inspection) of the Building Standards Act

4. Start time of improper activities

With respect to three companies and four units as described in 3.4. above, we could not identify when the improper activities were started. However, it was confirmed that improper activities had been conducted at least since 2007.

5. Causal analysis of the improper activities

- (i) As a result of leaving operations for regular inspections of moving walkways to the hands of personnel in charge and contractors, managers failed to ascertain the actual state of plans of allocation of employees and contractors (including qualified personnel for the operations). In addition, with respect to reports submitted to customers and regular inspection reports submitted to administrative agencies, there were no mechanism and system where managers check and approve the content of such reports.
- (ii) The personnel in charge interpreted laws wrongly and thought that even if they do not conduct inspections themselves, if they (qualified persons) check inspection results on their own, the inspections are valid. As such, compliance failed to be ensured.

6. Recurrence prevention measures

(i) Clarification of general administration manager

The general manager of the service department is to be appointed as the general administration manager, who supervises general management of both the Parking Service Tokyo Group and Parking Service Osaka Group and checks and approves all outputs from group leaders (hereinafter “GLs”) of both groups.

(ii) Thorough management of qualified personnel

Ensure that managers manage qualified personnel at SHI-MI and contractors, perform regular management work on a monthly basis, and if there is any change in qualified personnel, immediately update the list of qualified personnel.

(iii) Clarification of process for reviewing and approving inspection plans

Formulate regular inspection plans that deploy qualified personnel to ensure that inspections are conducted by qualified employees. Then, the general manager of the service department is to approve such plans after service GLs review the plans.

(iv) Inspection personnel being obligated to carry a certificate of qualification during the inspection

Inspection personnel are obligated to carry a certificate of qualification during the inspection so that third parties including customers can identify qualified personnel.

(v) Submission of service work reports

Examiners are to create a service work report, submit the report containing a qualified person number for each unit to the customer on their own and receive a signature of approval.

(vi) Clarification of process for reviewing and approving regular inspection reports

A regular inspection report is to be checked against a service work report and an inspection record sheet and then a service GL is to check and review inspection results. Thereafter, the regular inspection report is to be approved by a quality assurance GL and submitted to the customer.

(vii) Clarification of workflow implemented when there arises an issue for which improvement is required.

Clarify workflow that is implemented when there arises an issue for which improvement is required, make a report to specific administrative agencies about such issue, and then place a focus on equipment that needs to be improved. Thereafter, the quality assurance division and the relevant division are to follow up on the progress of improvement.

(viii) Revision of internal audit manual

Revise the internal audit manual for the QMS to include the procedure for checking quality records against measurement records, etc.

(ix) Implementation of education

Obligate personnel to participate in working-level examiner workshops held by a local legal entity with the aim of learning laws and regulations related to elevator inspections. Simultaneously, implement compliance education (internal training) regularly.

(x) Acquisition of information on amended laws and regulations

To obtain information at the time of amendment to laws and regulations, subscribe to alert services, and obtain the latest information on amended laws and regulations in each case.

End