Ministry of Industry (MOI)
Republic of Indonesia

ANNEX 8

The Project for the Indonesian Shipbuilding Industry Modernization

Project Completion Report

May 2024

Japan International Cooperation Agency (JICA)

MES Tokki Engineering CO.,Ltd

Table of Contents

I. Basic Information of the Project 1
1. Country 1
2. Title of the Project 1
3. Duration of the Project 1
4. Background 1
5. Overall Goal and Project Purpose 2
6. Implementing Agency 2

II. Results of the Project 3
1. Results of the Project 3
2. Achievements of the Project 10
3. History of PDM Modification 13
4. Others 15

III. Results of Joint Review 16
1. Results of Review based on DAC Evaluation Criteria 16
2. Key Factors Affecting Implementation and Outcomes 22
3. Evaluation on the results of the Project Risk Management 22
4. Lessons Learnt 24

IV. For the Achievement of Overall Goals after the Project Completion 26
1. Prospects to achieve Overall Goal 26
2. Plan of Operation and Implementation Structure of the Indonesian side to achieve Overall Goal 26
3. Recommendations for the Indonesian side 27
4. Monitoring Plan from the end of the Project to Ex-post Evaluation 27

ANNEX
ANNEX 1: Results of the Project
ANNEX 2: List of Products Produced by the Project
ANNEX 3: PDM
ANNEX 4: R/D, M/M, Minutes of JCC
ANNEX 5: Monitoring Sheet

I. Basic Information of the Project

1. Country

Republic of Indonesia

2. Title of the Project

The Project for the Indonesian Shipbuilding Industry Modernization

3. Duration of the Project

- Planned project implementation period: 24 Oct, 2016 to 23 Apr, 2024 (90 months)
- Actual project implementation period: 24 Oct, 2016 to 23 May, 2024 (91 months)
- Reason of schedule change:
  The first dispatch of JICA Short-Term Expert for the Component 2 was delayed 1 month. To cover the delay of the commencement of related activities, 1 month extension of the project period was agreed between JICA and MOI on 28th Sep, 2022

4. Background

Indonesia is an archipelago country comprises of approx. 17,508 islands, a coast-line of 81,000 km and ocean areas of 5.8 million km^2. Therefore, maritime sector plays important role in the Indonesia economy. In order to boost the national economy as well as to maintain the national interest, the President of Indonesia has established a new paradigm which is bringing Indonesia as global maritime fulcrum.

The new paradigm has brought significant impact for developing maritime industry. There is huge demand of vessels for various maritime activities such as sea-trade, fishing, oil and gas, and so on. Furthermore, the increasing number of old vessels has about additional demand of vessel to replace them. Currently, there are around 14,000 convention vessels in Indonesia, and around 20% of them are above 20 years old. If it assumes the lifetime of a ship is 30 years, Indonesia has to replace at least 2,800 vessels in the next 10 years.

On the other hand, the huge number of the demand has not maximally captured by the national shipbuilding industry due to some reason such as limited production facilities and technology capabilities, lack of skilled human resource, and limited source of funding. Currently, there are around 250 shipyard that less than 5,000 DWT. Consequently, most of the national shipping companies prefer

building their fleet overseas or buying from the second hand market.

Indonesia and Japan have long enjoyed close interdependent economic ties. Japan is Indonesia's largest export partner and also a major donor of development aid and to Indonesia, while Indonesia is a vital supplier of natural resources such as liquefied natural gas to Japan. In addition, Japanese shipbuilding industry has been known for its outstanding performance especially in the quality of its product and the use of advance technology.

The Ministry of Industry (MOI) has requested the JICA a technical cooperation project that consist of two main elements, technical advice and capacity building. The project goal is to increase efficiency in shipbuilding process as well as technical knowledge of human resource in the Indonesian shipbuilding industry.

During the discussion, the MOI explained the scope of the capacity building in the request including trainings, equipment, and technology improvement.

5. Overall Goal and Project Purpose

5.1 Overall Goal

Shipbuilding procedures and production management methods are improved at shipyards in Indonesia.

5.2 Project Purpose

A human resource development system is established to introduce efficient shipbuilding procedures and production management methods at shipyards in Indonesia.

6. Implementing Agency

- Ministry of Industry (MOI)
- Indonesia Shipbuilding and Offshore Association (IPERINDO)

II. Results of the Project

1. Results of the Project

1-1 Input by the Japanese side

(1) Amount of input by the Japanese side

- Plan: Approximately 393 million Japanese yen
- Actual: Approximately 389 million Japanese Yen

(2) Expert dispatch

i. Long-term Expert: 2 persons
Shipbuilding policy/ Technical Advisor

ii. Short-term Expert: 11 persons
Short-term Experts conducted skills training in the shipbuilding field for introduction of efficient construction procedures and production management methods in shipyards, and to establish human resource development system in Indonesia.

(3) Receipt of training participants

i. Training in Indonesia
- 35 persons (Surabaya venue : 20, Jakarta Venue : 15)
- Major training items
  - Shipyard Management
  - Shipbuilding Plan / Material Control
  - Design / Product Design (General / Shell expansion)
  - Hull Construction Engineering (including Accuracy Control)
  - Outfitting Engineering (Hull / Machinery / Electric)
  - Welding Engineering / Painting Engineering
  - Quality Control
  - Safety Control and Environmental Measures
- Number of times performed
  5 times each in Surabaya and Jakarta, 10 times in total

ii. Training in Japan
- 36 persons (1st group: 19, 2nd group: 17)
- Major training items
  The training participants e visited the following places to learn about construction methods, to experience improvement opportunities and 2S3TEI (sorting, setting, target location, target item, target quantity) practices.

- Several shipyards
- Several marine equipment manufacturers
- laboratory
- high-efficiency repair yards

・ Number of times performed
2 times (Once for each of the two groups)

(4) Equipment Provision

N/A

(5) Overseas activities cost
・ Plan: Approximately 12 million Japanese Yen
・ Actual: Approximately 13 million Japanese Yen

1-2 Input by the Indonesian side

(1) Counterpart assignment
・ Project Director: 1 person
・ Project Manager: 1 person
・ Secretariat: 4 persons
・ Assistant to the Project Manager: 4 persons
・ Training partners of IPERINDO: 12 persons

(2) Provision of offices, etc.
Project office for JICA Experts with necessary facilities (desks, chairs, internet access) was provided.
・ Jakarta: MOI
・ Surabaya: KAMPUH Academy （Prepared by MTE）

(3) Other items borne by the counterpart government:
Provision of necessary facilities for training (lecture room, equipment, etc.) for lecture.
・ Surabaya:
  - KAMPUH ACADEMY
  - Hotel Swiss Belinn Manyar
  - Hotel Fairfield Surabaya
・ Jakarta:
  - Pusat Industri Digital Indonesia (PIDI)

- Ruang Rajawali, Ministry of Industry
- Sofyan Hotel

1-3 Activities

1-3-1 Human resource development system (Output 1)

There are 10 activities related to Output 1 "A system for human resource development to introduce efficient shipbuilding procedures and production management methods is prepared". The outline of each activity is shown below. For the detailed activities, please see ANNEX 3.

1.1 To collect information on shipbuilding procedures and production management in the target shipyards to understand the technical level and problems.

The summary of the said information collected during the baseline survey is as follows.

- The work period for shipbuilding (Lead Time) tends to be extended due to insufficient resources and delayed delivery of materials, while the payment schedule for procurement of law materials and other cost was advanced, which lead to deteriorate cash flows.
- There is lack of understanding of the relationship between cash flow and companies' activities, which is one of the keys to ensure the corporate continuity.

(Not changed even though additional baseline survey)

1.2 To assess the current status of shipbuilding procedures and production management in the target shipyards and identify issues.

The summary of assessment and issues observed by the baseline survey is as follows.

- It is required to shorten the Lead Time in order to improve cash flows, and to introduce overall optimization method for shipbuilding system.
- There is need for capacity development activities, such as training programs to realize this overall optimization.

(Not changed even though additional baseline survey)

1.3 To identify the current delivery date and shipbuilding schedule at the target

shipyards.

The summary of delivery date and schedule was collected during the baseline survey as follows.

- The work period for shipbuilding (Lead Time) tends to be extended due to insufficient resources and delayed delivery of materials, while the payment schedule for procurement of law materials and other cost was advanced, which lead to deteriorate cash flows.
- There are cancelled projects due to late delivery.

(Not changed even though additional baseline survey)

1.4 To prepare training plans on standard shipbuilding procedures and production management based on the result of Activities 1.1-1.3.

The Application Guidelines for Training Programs including training plans is drafted and finalized on 13 July, 2022.

1.5 To prepare training materials (including instructor's manuals) on standard shipbuilding procedures and production management based on the training plans.

The six-volume textbook (2,849 pages total) and five appendices (219 pages total) in English were prepared as training materials in electronic format and as a book. In addition, materials (PowerPoint: 123 files, Excel: 2 files) for instructors to use for training have been prepared in electronic format. The PowerPoint documents can be used as teaching materials simply by playing them back as they are. In addition, most of the PowerPoint materials are written and sounded in Indonesian, rather than English, to make it easier for Indonesians to understand.

Structure of Textbook

1) Management
2) Production control, hull construction and logistics
3) Design
4) Outfitting
5) Welding, painting, quality assurance/quality control
6) Safety, environment

1.6 To revise and finalize training materials on standard shipbuilding procedures

and production management based on the activity 2.2.

The materials used in the training were reviewed and finalized after the training. As noted in 1.5, they were prepared as electronic data, such as PowerPoint, so instructors could use them as is or they could customize them to suit their own needs.

1.7 To adopt the training materials by MOI and IPERINDO developed through Activities 1.5 and 1.6 as the training materials to be used in human resource development training after the completion of this project.

MOI adopted the training materials by February 2024. They reported the latest status at the final JCC meeting in March 2024.

1.8 To prepare a draft human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) to introduce efficient shipbuilding procedures and production management methods after the completion of this project.

MOI and IPERINDO prepared the draft human resource development plan. MOI submitted the draft plan for confirmation at the final JCC meeting in March 2024.

1.9 To publish the adopted training materials (in Indonesian and English).

MOI published the training materials in English in February 2024, and Indonesian version will follow as soon as translation is completed.

1.10 To advise MOI on policy for shipbuilding industry development and promotion including the human resource development plan.

Sustainable implementation of human resource development was discussed among the Project Team members. In addition to preparation of the human resource development plan, it is desirable to establish an educational promotion organization among IPERINDO and/or related companies, so that sustainable activities can proceed smoothly and progressively. Such a functioning organization will provide environment in which support activities from Japanese companies can be carried out more quickly and sustainably.

1-3-2 Shipbuilding procedures and production management (Output 2 and 3)

There are 7 activities related to Output 2 "Training participants' competence in shipbuilding procedures and production management is improved" and Output 3 "Understanding of how to introduce efficient shipbuilding procedures and production management methods customized for each shipyard is deepened". The outline of each activity is shown below. For the detailed activities, please see ANNEX 3.

2.1 To determine the target shipyards and select the training participants.

The Working Group agreed to the nominee qualifications both for shipyards and participants for the trainings as the follows.

<Nominee Qualification for Shipyards>

Applying companies are required to;

(i) be a member company of IPERINDO,
(ii) have experience of new shipbuilding,
(iii) have willingness to carry out company (system) productivity improvement, and
(iv) be shared by domestic capital, in principle.

Applying companies are desirable to;

(v) have at least 100 employees (including subcontracting)

<Nominee Qualification for Participants>

Applying personnel is required to;

(i) the one is to be a manager / the other is to be head of shipbuilding engineers, and
(ii) have more than three (3) years of practical experience in shipbuilding engineering field with basic command of English.

The nineteen (19) participating shipbuilding companies were selected by the Working Group following the above-mentioned qualification as listed in the table below.

No.	Name of Shipbuilding Companies
1	PT. Dock & Perkapalan Kodja Bahari
2	PT Dock Bahari Nusantara
3	PT Pahala Harapan Lestari
4	PT. Industri Kapal Indonesia

5	PT. Dukuh Raya Shipyard
6	PT. Samudra Marine Indonesia
7	PT. Modding Jaya Marine
8	PT . Louis Alain
9	PT. Galangan Balik Papan Utama
10	PT. Patria Maritim Perkasa
11	PT. Muara Kembang Shipyard
12	PT. Dock & Perkapalan Air Kantung
13	PT. Dumas Tanjung Perak Shipyard
14	PT. Dok Perkapalan Surabaya
15	PT. Adiluhung Sarana Segara Indonesia
16	PT.Orela Shipyard
17	PT. Yasa Wahana Tirta Samudera
18	PT. Janata Marina Indah
19	PT. Waruna Shipyard Indonesia

2.2 To conduct a series of trainings in Indonesia to the shipbuilding engineers on standard shipbuilding procedures and production management methods.

A total of 10 training sessions were conducted, 5 each in Surabaya and Jakarta.

2.3 To conduct training in Japan.

A total of 36 people in two groups participated in the training in Japan.

3.1 To draft shipbuilding procedures and production management methods customized for each shipyard based on the standard shipbuilding procedures and production management methods by training participants that meet actual situation of facilities and equipment.

The participating shipyards completed the creation of improvement plans to build productivity as they learned and utilized the Ambitious Target*, Thinking process/framework for building improvement plans (15/19 shipyards). Some of the shipyards actually implemented the plans and confirmed the results.

**Ambitious Target: One of the frameworks of the Thinking Process, a method that leads to a process chart that realizes a large goal that is very unlikely to be realized. It is a method to create a process to achieve the*

intermediate goal of a big goal from the current situation by drawing the intermediate goal and considering the connection between the intermediate goal and the current situation to achieve the first goal.

3.2 To draft facilities / equipment plans and internal human resource development plans by training participants for necessary to introduce the customized shipbuilding procedures and production management methods for each shipyard.

The process for improving productivity will be the same logic/process for each company. Since it is important to ensure that this process is covered in the Ambitious Targets. (15/19 shipyards) completed the process.

3.3 To disseminate the procedures and methods as well as the plans drafted in Activities 3.1 and 3.2 by training participants (e.g. have a seminar), to their own company including the management level.

One of the participating shipyards, Orela shipyard, revealed significant reduction of the work period of the shipbuilding by adopting the improved procedures and production management methods, during the process disruption crisis. This successful case of Orela shipyard was shared with the participating shipyards in advance, expectations for this improvement grew, and many of the shipyards presented the above-mentioned Ambitious Target to their management in advance and obtained their agreement.

3.4 To monitor the progress of Activities 3.1 to 3.3, and advise on the adaptation to the site.

During three follow-up visits to participating shipyards, the progress of 3.1 to 3.3 was reviewed and advice was given to promote adaptation to the site.

2. Achievements of the Project

2-1 Outputs and indicators

2-1-1 Output 1

The main achievement of Output 1 “A system for human resource development to introduce efficient shipbuilding procedures and production management methods is prepared” is summarized in the following table based on the Objectively Verifiable Indicators. In this regard, the overall achievement of Output 1 rates “High” since most of indicators have been achieved.

Output/Indicators	Achievement (%)	Major Results
Output 1: A system for human resource development to introduce efficient shipbuilding procedures and production management methods is prepared.		
Indicator 1-1: Training materials on shipbuilding procedures and production management (including instructor's manuals) are developed.	100%	Textbooks were prepared in electronic and paper formats, and lecture materials such as PowerPoint were also prepared in electronic format.
Indicator 1-2. Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) is developed.	100% Ongoing planning activities are underway.	MOI has committed to budget and implement a sustainable human resource development plan. However, the budget had the years 2025 and 2026 and did not support activities in 2024. In response to this situation, funding was considered for sponsors other than MOI, such as IPERINDO and shipyards, to support activities in 2024. The content was to be further improved together with IPERINDO.

2-1-2 Output 2

The main achievement of Output 2 "Training participants' competence in shipbuilding procedures and production management is improved" is summarized in the following table based on the Objectively Verifiable Indicators. In this regard, the overall achievement of Output 2 rates "High" since most of indicators have been achieved.

Output/Indicators	Achievement (%)	Major Results
Output 2: Training participants' competence in shipbuilding procedures and production management is improved.		
Indicator 2-1: More than 75% of training participants complete the whole training.	100%.	Although some training participants missed some of the training sessions due to illness or other reasons, all participants completed the whole training without dropping out.

2-1-3 Output 3

The main achievement of Output 3 "Understanding of how to introduce efficient shipbuilding procedures and production management methods customized for each shipyard is deepened" is summarized in the following table based on the Objectively Verifiable Indicators. In this regard, the overall achievement of Output 3 rates "High" since most of indicators have been achieved.

Output/Indicators	Achievement (%)	Major Results
Output 3: Understanding of how to introduce efficient shipbuilding procedures and production management methods customized for each shipyard is deepened.		
Indicator 3-1: More than 50% of the shipyards that participated in the training develop the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans.	Over 100%	The productivity improvement process should be the same in all shipyards. This process was planned using Ambitious Target, a framework provided by Thinking Process, which builds improvement plans. 15 out of 19 companies (79%) completed the process in phase 5..
Indicator 3-2: More than 50% of shipbuilding engineers at each shipyard attend the presentation/seminar of the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans	Over 100%	Prior to the completion of Ambitious Target in the fifth phase, the Indonesian training partner provided guidance on the implementation of the preliminary explanation, and 15 out of 19 shipyards (79%) implemented the preliminary explanation. Many companies were able to obtain consent from management.

2-2 Project Purpose and indicators

Project Purpose / Indicators	Achievement (%)	Achievement
Project Purpose: A human resource development system is established to introduce efficient shipbuilding procedures and production management methods at shipyards in Indonesia.		
Indicator 1: Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) is approved by MOI and IPERINDO	100% Ongoing planning activities are underway.	MOI has committed to budget and implement a sustainable human resource development plan. However, the budget had the years 2025 and 2026 and did not support activities in 2024. In response to this situation, funding was considered for sponsors

		other than MOI, such as IPERINDO and shipyards, to support activities in 2024. The content was to be further improved together with IPERINDO.
Indicator 2: Training materials are adopted by MOI and IPERINDO	100%	MOI adopted the training materials by February 2024. They will report the latest status at the final JCC meeting in March 2024.
Indicator 3: At more than 50% of the shipyards that participated in the training, the draft documents (customized shipbuilding procedure & production management method, facilities / equipment plans and internal human resource development plans) are responded by the management level of each company.	Over 100%	Having learned that productivity improvements are achieved through management, participants explain to management how to make improvements. The follow-up also confirmed the presence of management's high regard for the program. 12 of 19 participating(63%) companies were able to obtain consent from management

3. History of PDM Modification

PDM was revised based on the requirement that was confirmed according to the progress of the Project.

The history of the revision is shown below.

Version	Contents of Revision
Version 0	・The initial PDM was agreed by signing M/M dated on 20 Jan, 2022
Version 1	・Revised on 7th July 2022 (by approved in the 1st JCC) ・Revised points 1) Overall Goal, Indicator 1 Before) Status of implementation of human resource development plan by MOI and IPERINDO (XX trainings are conducted by MOI and IPERINDO, XX participants are trained, XX shipyards that participated in the training prepared the customized shipbuilding procedure & production management

methods, facilities / equipment plans and internal human resource development plans)

After) Status of implementation of human resource development plan by MOI and IPERINDO (at least one (1) trainings are conducted by MOI and IPERINDO)

2) Overall Goal, Indicator 2

Before) More than XX% of shipyards that participated in the training build ships in accordance with the customized shipbuilding procedures and production management methods developed through training plans and internal human resource development plans)

After) More than 25% of shipyards that participated in the training build ships in accordance with the customized shipbuilding procedures and production management methods developed through training

3) Project Purpose, Indicator 3

Before) At more than XX% of the shipyards that participated in the training, the draft documents (customized shipbuilding procedure & production management method, facilities / equipment plans and internal human resource development plans) are responded by the management level of each company.

After) At more than 50% of the shipyards that participated in the training, the draft documents (customized shipbuilding procedure & production management method, facilities / equipment plans and internal human resource development plans) are responded by the management level of each company.

4) Output, Indicator 201

Before) More than XX% of training participants complete the whole training.

After) More than 75% of training participants complete the whole training.

	5) Output, Indicator 3-1 Before) More than XX% of the shipyards that participated in the training submit the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans. After) More than 50% of the shipyards that participated in the training submit the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans. 6) Output, Indicator 3-2 Before) More than XX% of the shipbuilding engineers at each shipyard attend the presentation/seminar of the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans After) More than 50% of the shipbuilding engineers at each shipyard attend the presentation/seminar of the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans

4. Others

4-1 Results of Environmental and Social Considerations (if applicable)

N/A

4-2 Results of Considerations on Gender/Peace Building/Poverty Reduction, Disability, Disease infection, Social System, Human Wellbeing, Human Right, and Gender Equality (if applicable)

N/A

III. Results of Joint Review

1. Results of Review based on DAC Evaluation Criteria

In accordance with the Project Monitoring and Evaluation System of JICA, the Project was evaluated in light of five evaluation criteria of Relevance, Effectiveness, Efficiency, Impact and Sustainability by the joint review used the following categories; Very High, High, Fair, Low.

Then the total project evaluation rate would be given by Highly Satisfactory / Satisfactory / Partially satisfactory / Unsatisfactory. Based on joint evaluation for DAC Evaluation Criteria, the Project was rated as Highly Satisfactory. (Evaluation result of sub-criteria, Relevance: Very High, Effectiveness: High, Efficiency: High, Impact: Very High, Sustainability: High)

1-1 Relevance

The Project remained relevant to Indonesia's development policies and Japanese ODA policies. It also corresponds to needs of C/P organizations. Thus, relevance is “High”.

(1) Consistency with Development Policy

President Joko, who took office in 2014, has put forward the promotion of the shipbuilding industry and advocated improving the country's shipbuilding production capacity and international competitiveness for domestic ship production. in March 2015, the Japan-Indonesia Summit Joint Statement expressed support for the "shipbuilding industry promotion". In 2009, the Ministry of Industry (MOI) established a roadmap for the maritime industry up to 2025, which includes the development of domestic ship-related industries and the establishment of domestic shipyards to serve as ship repair shops.

In light of this, it can be said that this project is highly consistent with Indonesia's development policy.

(2) Consistency with Development Needs

Indonesia has a large demand for new vessels for trade, energy transportation, maritime security, port maintenance, fisheries, and domestic inter-island transportation, as well as for the repair of existing vessels.

The main problem is the unavailability of competitive financing scheme for

domestic ship procurement.

As a result, the majority of ship procurement in Indonesia relies on building ships at overseas shipyards or purchasing used ships, while domestic shipyards mainly repair existing ships and build new government ships.

For this reason, IPERINDO is trying to obtain a Competitive Financing Scheme for Domestic Ship Procurement, and has also conveyed it to various parties including the Ministry of Industry, the Coordinating Ministry for Economic Affairs, Bappenas, and Foreign Agencies.

Beside that, to increase it competitiveness, national shipyards must enhance their capabilities to meet the needs in the fields of construction procedures and production management methods, as well as increasing the capabilities of human resources with the necessary skills.

Given this situation, the goals of this project are highly consistent with the needs of the Indonesian shipbuilding industry.

(3) Appropriateness of project plan and approach

Simply teaching efficient construction procedures and production management methods practiced in Japanese shipyards to Indonesian shipyards would limit the target to similar projects involving trained personnel, and the effect would be transitory. Therefore, this activity was designed to develop a system for human resource development to introduce efficient construction procedures and production management methods. Specifically, we trained not only participants but also local training partners, as well as created and provided a base of teaching materials for them to use.

In Indonesia, where many shipyards are located, such an approach is appropriate because it is expected to have a lasting effect even after the activity is completed.

1-2 Coherence

The Project is implemented in line with Japanese ODA Policy. Meanwhile, there is less coherence with other JICA projects. Thus the evaluation rate of coherence is “fair”.

(1) Coherence with Japanese ODA Policy

Human resource development for shipbuilding in Indonesia contributes to strengthening human connectivity in the “Free and Open Indo-Pacific Strategy

(FOIP)" that Japanese government is promoting. The Project is also under the development issue "quality infrastructure development" under the priority area "assistance for enhancing international competitiveness" of Japan's Country Assistant Policy for Indonesia.

The Project is coherent with Japanese policy and SDGs as global agenda.

(2) Collaboration with JICA's other projects

N/A

(3) Collaboration with other projects

The promotion of the shipbuilding industry and human resource development in Indonesia would contribute to Sustainable Development Goals (SDGs) Goal 9 "build resilient infrastructure, promote sustainable industrialization and foster innovation".

1-3 Effectiveness

Effectiveness of the Project was evaluated as "High" based on following aspects.

(1) Degree of the achievement of the project purpose

Project Purpose and Indicators	Achievement
1. Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) was approved by MOI and IPERINDO	MOI has committed to budget and implement a sustainable human resource development plan. However, the budget had the years 2025 and 2026 and did not support activities in 2024. In response to this situation, funding was considered for sponsors other than MOI, such as IPERINDO and shipyards, to support activities in 2024. The content was to be further improved together with IPERINDO.

2. Training materials were adopted by MOI and IPERINDO	Textbooks were available in electronic and paper versions; lecture materials such as PowerPoints were also available in electronic version; MOI will adopt training materials by February 2024; textbooks were handed over to MOI at the final JCC meeting in March 2024.
3. At more than 50% of the shipyards that participated in the training, the draft documents (customized shipbuilding procedure & production management method, facilities / equipment plans and internal human resource development plans) were responded by the management level of each company	It is confirmed during 5th phase management training, final brushing up training on each Ambitious target, that 12 of 19 participating(63%) companies were able to obtain consent from management.

1-4 Efficiency

Efficiency of the Project was evaluated as "High" based on following aspects.

(1) Project Cost

The actual project cost, 389 million Japanese yen, is nearly equal to the planned amount of 391 million Japanese yen (99.5%). While the project period was increased by 1 month, Project Team conducted the planned training activities utilizing on-site and online, for smooth implementation within the planned budget. Thus the increase of the project period did not cause to increase the cost.

Plan	391 million Japanese yen
Result	389 million Japanese yen

(2) Project Period

The signing of the 6th amendment to the R/D was delayed until January 20, 2022 due to IPERINDO's concern over the height of the goal. Therefore, the start of Component 2 activities was delayed from the originally scheduled April 2022 and started on May 17, 2022, when the JICA short-term expert team was dispatched to Indonesia.. In this regard, the both parties agreed to extend one-month period until 23 May, 2024. Therefore, the project duration

will be ninety one (91) months in total from 24 Oct. 2016 including Component 1 and 2.

Plan	24 Oct. 2016 – Apr. 2024 (90 months)
Result	24 Oct. 2016 – 23 May. 2024 (91 months)

(3) Causal Relationship

Although the start of Component 2 was one month behind the original schedule, since the duration was kept at 24 months by extending the Project Period by one month, the output was fully produced.

1-5 Impact

Impact of the Project was evaluated as "High" based on following aspects

(1) Prospects to achieve the overall goal

During the project period, several participating companies adopted the newly learned shipbuilding procedures and showed positive results in reducing shipbuilding construction time. The project team presented these good practices to the stakeholders, which is expected to accelerate dissemination and achieve the overall goal of improving shipbuilding procedures and production management practices in shipyards in Indonesia.

(2) Causal relationship

It is also expected that the post-project human resource development plan by MOI and IPERINDO, along with the budget, will strengthen the foundation for the improvement of the Indonesian shipbuilding industry. While improvement of shipbuilding procedures is revealed at some of participating shipyards during the Project, the project purpose, establishment of a human resource development system, is a key for further dissemination, and to achieve the Overall Goal.

(3) Ripple effect

No negative ripple effect is expected. Group training and stakeholder meetings contributed not only capacity building, but also strengthened the relationship between MOI and shipyard companies. By strengthening such network, MOI

would be able to reflect the needs of private sector on their policy making more closely.

1-6 Sustainability

Sustainability of the Project was evaluated as "High" based on following aspects

(1) Policy and System

MOI has been working to obtain an education budget based on the human resource development plan (2024-2026) approved by MOI and IPERINDO, but was only able to obtain a budget for the result (2025-2026). In response to this situation, the IPERINDO side expressed the opinion that the activities in 2024 should be added and enhanced with private sector funding. It was decided to work with IPERINDO to organize improvement measures considering private funding. If the MOI, which is in charge of shipbuilding projects, secures the budget and IPERINDO takes the initiative in providing financial support, the shipyards' efforts will be strongly backed up.

(2) Since shipyards in Indonesia are suffering from financial difficulties due to delays in the process, it is essential for each shipyard to further develop the results of this project and be transformed into a more efficient shipyard in order to survive and develop. Institutional and Organizational aspect of the implementing agency

The human resource development plan (2024-2026) to be approved by MOI includes implementation structure, training plan, budget measures, etc. The MOI and IPERINDO, which are in charge of shipbuilding operations, will promote activities in accordance with this plan.

(3) Technical Aspect of the implementing agency

During the two years that this project has been active, the training partners have worked with the instructors on lectures and other activities. As a result, their skill levels have improved significantly, and they are now capable of giving lectures on their own.

(4) Financial Aspect

Based on the Human resource development plan (2024-2026), MOI will

secure a budget. Therefore, there would less likely be budget concern for the next three years until 2026, and since the MOI will be the main promoter of the project, it is highly likely that the budget will be secured thereafter as well.

2. Key Factors Affecting Implementation and Outcomes

Followings are the affecting factors observed in the Project implementation.

(1) Expansion of Covid-19 pandemic

Due to the global COVID-19 disaster, JICA long-term Expert temporarily stayed in Japan from 28 March, 2020 to 19 March, 2021 to work remotely. In addition, the signing of sixth Amendment of R/D was made on 20 January, 2022, which was three months behind the expected schedule. As a result, Component 2 activities began on 17 May, 2022, one month later than originally scheduled for April 2022.

(2) Securing budget on the Indonesian side

The following costs were to be shared by the Indonesian side

- Travel expenses and daily allowances for training partners and other Indonesian personnel
- Charge for venue

The budget for the three training sessions each in Jakarta and Surabaya, scheduled for 2022, was not secured.

Initially, the plan was for all training to be conducted on-site, with participants gathering in classrooms. However, in order to cover the budget shortfall on the Indonesian side, half of the training sessions from the third to fifth phases were changed to online training sessions that could be attended from the participants' own offices. This reduced the burden on the Indonesian side, and we were able to complete all of the originally planned training sessions.

3. Evaluation on the results of the Project Risk Management

3-1 Risk management results

(1) Expansion of Covid-19 pandemic

Both the Japanese and Indonesian sides agreed to extend one-month period until 23 May, 2024. Therefore, the project duration will be ninety one (91) months in total and the implementation period for Component 2 was 24 months as planned.

After the start of Component 2, the impact of COVID-19 was not significant.

(2) Securing budget on the Indonesian side

In the third through fifth phases, half of the training was conducted online so that participants could receive the training remotely at their respective affiliations. This problem was handled without any problems by being prepared to offer training online in case of travel restrictions due to COVID-19.

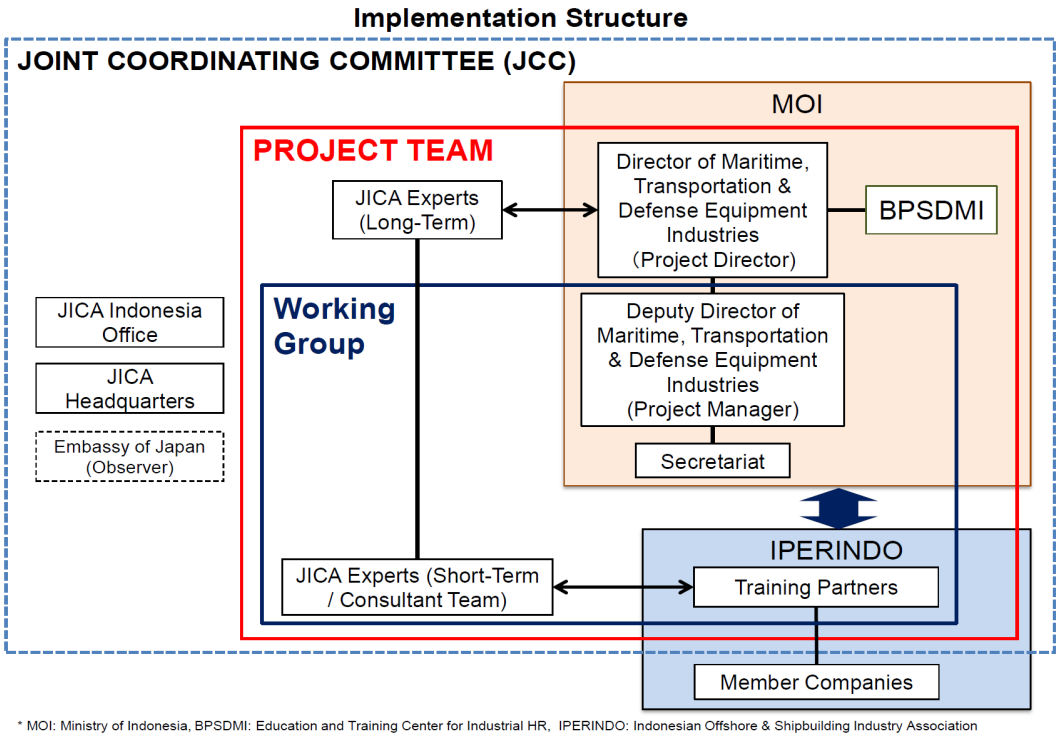
3-2 Results of the use of lessons learnt

The ex-ante evaluation report states. "The project team, with the MOI, which is in charge of shipbuilding administration, at its core, and IPERINDO, a shipbuilding industry organization, and the Industrial Human Resources Development Agency (BPSDMI), which is in charge of industrial human resource development, will be established to promote the networking of this project and to jointly develop a human resource development plan (2024-2026), which will be disseminated after the completion of this project."

This project faithfully follows this and has established a project team with MOI at its core, IPERINDO, and BPSDMI. The organizational chart is shown below.

With MOI at the core and IPERINDO and BPSDMI added to the project team, the Indonesian side was actively involved in selecting participating companies and participants, arranging lecture rooms and hotels for the participants, and other environmental arrangements, so that the Japanese side did not have to bother with these matters. This allowed the short-term experts to concentrate on their primary tasks of preparing teaching materials and giving lectures.

Furthermore, the human resource development plan (2024-2026) was jointly developed and completed. Since IPERINDO has taken the initiative in preparing this plan and MOI has made efforts to obtain the educational budget, it is expected that the Indonesian side will proceed based on this plan after the completion of this project.



4. Lessons Learnt

According to the plan, lectures in the Project were to be given in English. However, English is not the native language of either Japanese or Indonesians. It is possible that lectures given in a language that is not the native language of both the lecturers and the participants may not convey the exact meaning of the lecture.

Therefore, in many of the training sessions in this project, the PowerPoint slides were translated into Indonesian, and the audio translated into Indonesian was recorded on each page of the PowerPoint presentation in advance and played back during the lecture. However, English was used for on-the-spot supplementation by the lecturers. This method of training had the following three advantages.

- Participants easily and accurately understood the lecture content. because the lectures were given in the participants' native language.
- The training partner was responsible for translation into Indonesian, and the translation was completed in consultation with the Japanese lecturer, which improved the level of understanding of the training partner regarding the lecture content.
- The PowerPoint materials, which included not only the slides but also audio recordings in Indonesian (and some in English), were left behind and can be effectively utilized for human resource development after the completion of this

project.

In addition, the training partners for this activity are geographically distant from each other, with the training partner in Surabaya and the Japanese lecturer in Japan. Moreover, the Indonesian participants are from various parts of Indonesia. Therefore, one of the challenges was how to share information, create teaching materials, and disclose teaching materials to participants in an efficient manner. Therefore, a website was established exclusively for this activity, where the latest information could be shared as it became available. This method was confirmed to be effective in sharing information among many geographically distant locations.

IV. For the Achievement of Overall Goals after the Project Completion

1. Prospects to achieve Overall Goal

This chapter is jointly prepared by JICA Experts and the core member of the JCC from Indonesian side to summarize on prospects to achieve overall goal of the Project as well as the necessary actions to be taken after completion of the Project. Overall goal is predetermined in PDM as below.

<<Overall Goal>>

Shipbuilding procedures and production management methods are improved at shipyards in Indonesia.

<< Indicator >>

1) Status of implementation of human resource development plan by MOI and IPERINDO (at least one (1) training program is conducted by MOI and IPERINDO)

2) More than 25% of shipyards that participated in the training build ships in accordance with the customized shipbuilding procedures and production management methods developed through training.

During the Project, some participating companies adopted the newly learnt shipbuilding procedures, and showed good result by reducing the work period of shipbuilding. Since the Project Team introduced these good examples to stakeholders, it expects to accelerate dissemination, and achieve the Overall Goal: improvement of the shipbuilding procedures and production management methods in shipyards in Indonesia.

2. Plan of Operation and Implementation Structure of the Indonesian side to achieve Overall Goal

MOI has committed to budget and implement a sustainable human resource development plan. However, the budget had the years 2025 and 2026 and did not support activities in 2024. In response to this situation, funding was considered for sponsors other than MOI, such as IPERINDO and shipyards, to support activities in 2024. The content was to be further improved together with IPERINDO. The

Ministry of Industry expressed its commitment to a positive post-project improvement plan, confirming the possibility of continued support from JICA and Japanese companies in the plan to improve.

3. Recommendations for the Indonesian side

It is considered that the situation is very promising, as the Indonesian side has formulated an action plan for sustainable activities and has indicated its willingness to implement it. Timely support and review of the actual implementation of the plan and further educational activities, including exchanges with Japanese partner companies, will be necessary for more stable growth of the Indonesian shipbuilding industry. It is recommended that ongoing communication with Japanese companies be maintained.

4. Monitoring Plan from the end of the Project to Ex-post Evaluation

The Ex-post Evaluation will be conducted 3 years after completion of the Project. Apart from the Ex-post Evaluation, the implementation status of the Human Resource Development Plan should be reviewed and reported to JICA Indonesia Office at annual basis.

別添　9

ANNEX 5（PCR 付属資料より）

Monitoring Sheet

5-1　Monitoring Sheet Ver.1（Term: - June, 2022）..... 1

5-2　Monitoring Sheet Ver.2（Term: July 2022- Dec, 2022）..... 10

5-3　Monitoring Sheet Ver.3（Term: Jan 2023- Jun 2023）..... 24

5-4　Monitoring Sheet Ver.4　(Term: July 2023- Dec 2023)..... 33

5-1 Monitoring Sheet Ver.1（Term: - June, 2022）

TO CR of JICA INDONESIA OFFICE

Project Monitoring Sheet

Project Title : The Project for the Indonesian Shipbuilding Industry Modernization
Version of the Sheet: Ver.1（Term: - June, 2022）

Name: Mr. Ir. R. Hendro Martono
Title: Project Director
Name: ODA Yoichi
Title: Shipbuilding Policy and Technical Advisor
Submission Date: 7 July, 2022

I. Summary

1 Progress

1-1 Progress of Inputs

<table>
<tr><th>Input</th><th>Plan (January 2022)</th><th>Actual (End of June 2022)</th></tr>
<tr><td colspan="3">Japanese Side</td></tr>
<tr><td>Experts</td><td><Long Term Expert>
1) Shipbuilding Policy and Technical Advisor
<Short Term Experts>
2) Shipyard Management
3) Shipbuilding Plan / Material Control
4) Design / Product Design (General / Shell expansion)
5) Hull Construction Engineering (including Accuracy Control)
6) Outfitting Engineering (Hull / Machinery / Electric)
7) Welding Engineering / Painting Engineering
8) Quality Control
9) Safety Control and Environmental Measures</td><td>Total MM: 74MM
1) Shipbuilding Policy and Technical Advisor
<table><tr><th>MM</th><th>Period</th><th>Name</th></tr><tr><td>67.0</td><td>24 Oct 2016 - 23 May 2022</td><td>Mr. TAKINO Seiichi</td></tr><tr><td>1.5</td><td>16 May 2022 -</td><td>Mr. ODA Yoichi</td></tr></table>Note: Mr. Takino temporary stayed in Japan from 28 March 2020 to 19 March 2021 and worked remotely due to the COVID-19 pandemic.
2) Team Leader / Shipyard Management
<table><tr><th>MM</th><th>Period</th><th>Name</th></tr><tr><td>1.5</td><td>17 May 2022 -</td><td>Mr. DOI Hirofumi</td></tr></table>3) Other Experts
<table><tr><th>Field</th><th>MM</th><th>Period</th><th>Name</th></tr><tr><td>Shipbuilding Plan / Material Control</td><td>0.5</td><td>18 June 2022 -</td><td>Mr. ARAKI Nobuaki</td></tr><tr><td>Hull Construction Engineering</td><td>0.5</td><td>18 June 2022 -</td><td>Mr. NAKATA Kenji</td></tr><tr><td>Shipbuilding Engineering Management</td><td>1.5</td><td>17 May 2022 -</td><td>Mr. HIRUMA Takuro</td></tr><tr><td>Production Design (General)</td><td>1.5</td><td>17 May 2022 -</td><td>Mr. INOUE Hirotaka</td></tr></table></td></tr>
<tr><td>Equipment</td><td>- N/A</td><td>- N/A</td></tr>
<tr><td>Training</td><td>- Training both in Indonesia and in Japan</td><td>1) Training in Indonesia
The training in Indonesia will be commenced in Sep 2022 and completed in Sep 2023.</td></tr>
</table>

<table>
<tr><td></td><td></td><td>2) Training in Japan
The training in Japan is scheduled to conduct in June - July 2023.</td></tr>
<tr><td colspan="3"><u>Indonesian Side</u></td></tr>
<tr><td>Counterpart</td><td>- Project Director
- Project Manager
- Secretariat
- Assistant to the Project Manager
- Training Partners</td><td>- Project Director
Mr. Ir. R. Hendro Martono, Director of Directorate of Maritime, Transportation & Defense Equipment Industries, MOI
- Project Manager
Mr. Andi Komara, Deputy Director of Maritime Industry, MOI
- Secretariat
XXXX
- Assistant to the Project Manager
To be appointed by IPERINDO
- Training Partners
<table>
<tr><th></th><th>Name</th><th>Organization</th></tr>
<tr><td>1</td><td>Didid Mirjanto</td><td>Kampuh Welding Indonesia</td></tr>
<tr><td>2</td><td>Suhandoko</td><td>Kampuh Welding Indonesia</td></tr>
<tr><td>3</td><td>Herman Prasetyo</td><td>Ex. PT. PAL</td></tr>
<tr><td>4</td><td>Edy Widarto</td><td>Ex. PT. PAL</td></tr>
<tr><td>5</td><td>Mochamad Zaed Yuliadi</td><td>Kampuh Welding Indonesia</td></tr>
<tr><td>6</td><td>Andi Setiawan</td><td>Ex. PT. PAL</td></tr>
<tr><td>7</td><td>Soeharto</td><td>Ex. PT. PAL</td></tr>
<tr><td>8</td><td>Budi Santosa</td><td>Ex. PT. PAL</td></tr>
<tr><td>9</td><td>Turitan Indaryo</td><td>PT.PAL Advisor</td></tr>
<tr><td>10</td><td>Toni Martino</td><td>Ex. PT. PAL</td></tr>
<tr><td>11</td><td>Djoko Sutejo</td><td>Ex. PT. PAL</td></tr>
<tr><td>12</td><td>Trimunas Prijanto</td><td>Ex. PT. PAL</td></tr>
</table></td></tr>
<tr><td>Project office</td><td>Project office for Japanese experts with necessary facilities (desks, chairs, internet access)</td><td>Project office for Japanese experts with necessary facilities (desks, chairs, internet access) was provided.</td></tr>
<tr><td>Training facilities</td><td>Provision of necessary facilities for training (lecture room, equipment, etc.) for lecture.</td><td>To be secured.</td></tr>
</table>

1-2 Progress of Activities

Overall

- The Project was commenced on 24th October 2016 when Mr. TAKINO Seiichi, JICA Long-term Expert (Shipbuilding Policy and Technical Advisor) has arrived in Djibouti.
- The Consultant Contract for Component 2 (technical cooperation for human resource development and capacity building for Indonesian shipbuilding industry) under the Project between the MES TOKKI & Engineering Co., Ltd. (MES) and JICA was signed in April 2022.
- The Component 2 has been commenced on 17 May, 2022 when the JICA Short-term Experts

Team for C2 to Indonesia was dispatched.

- The Work Plan for Component 2 (technical cooperation for human resource development and capacity building for Indonesian shipbuilding industry) under the Project was finalized and shared by JICA Expert with the Project members.
- The JCC meetings were held as follows:

	Date
1st JCC	7 July, 2022

- The Monitoring Sheets were submitted to JICA Indonesia Office as follows:

	Submission Date
The Monitoring Sheet ver.1 (-June 2022)	7 July, 2022

Output 1: A system for human resource development to introduce efficient shipbuilding procedures and production management methods is prepared.

- The JICA Expert Team conducted the baseline survey from 24th May to 30th June, 2022. The ship building companies visited and interviewed by the Team were listed below.

No.	Date	Name
1	24 May	PT. Dock & Perkapalan Kodja Bahari
2	25 May	PT DAYA RADAR UTAMA
3	30 May	PT Noahtu Shipyard
4	2 June	PT. Dock Bahari Nusantara
5	6 June	PT. Mariana Bahagia
6	8 June	Pahala Harapan Lestari
7	11 June	PT. Dock & Perkapalan Air Kantong
8	13 June	PT Steadfast
9	16 June	PT. Muara Kembang
10	20 June	PT. Industri Kapal Indonesia
11	23 June	DUMAS
12	23 June	PT. Dok Perkapalan Surabaya
13	24 June	ADILUHUNG
14	30 June	PT. Yasa Wahana Tirta Samudera
15	30 June	PT. Janata Marina Indah
16	11 July (scheduled)	CAPUTRA MITRASEJATI

1.1 To collect information on shipbuilding procedures and production management in the target shipyards to understand the technical level and problems.

- The work period for shipbuilding (Lead Time) tends to be extended due to insufficient

resources and delayed materials, while the payment schedule for procurement of law materials and other cost was advanced, which lead to deteriorate cash flows.
- Lack of understanding of the relationship between cash flow and companies' activities, which is one of the keys to ensure the corporate continuity.

1.2 To assess the current status of shipbuilding procedures and production management in the target shipyards and identify issues.
- It is required to shorten the Lead Time in order to improve cash flows, and to introduce overall optimization method for shipbuilding system.
- There is need for capacity development activities, such as training programs to realize this overall optimization.

1.3 To identify the current delivery date and shipbuilding schedule at the target shipyards.
- The work period for shipbuilding (Lead Time) tends to be extended due to insufficient resources and delayed materials, while the payment schedule for procurement of law materials and other cost was advanced, which lead to deteriorate cash flows.
- Confirmed cancelled projects due to late delivery

1.4 To prepare training plans on standard shipbuilding procedures and production management based on the result of Activities 1.1-1.3
- Learning about holistic optimization and how to implement it is built into the training schedule.

Output 2: Training participants' competence in shipbuilding procedures and production management is improved.

2.1 To determine the target shipyards and select the training participants.
- The Working Group agreed to the nominee qualifications both for shipyards and participants for the trainings as the follows.

  <Nominee Qualification for Shipyards>

  Applying companies are required to;

  (i) be a member company of IPERINDO,

  (ii) have at least 100 employees,(Including permanent subcontracting)

  (iii)have experience of new shipbuilding,

  (iv)have willingness to carry out company (system) productivity improvement, and

  (v) be shared by domestic capital, in principle.

  <Nominee Qualification for Participants>

  Applying personnel is required to;

  (i) the one is to be a manager / the other is to be head of shipbuilding engineers, and

(ii) have more than three (3) years of practical experience in shipbuilding engineering field with good command of English.

- The fifteen (15) participating shipbuilding companies were tentatively selected by the Working Group following the above-mentioned qualification as listed in the table below. The Working Group will deliver the Application Guidelines to the selected companies by 20 July, 2022.

No.	Name of Shipbuilding Companies
1	PT. Dock & Perkapalan Kodja Bahari
2	PT DAYA RADAR UTAMA
3	PT Noahtu Shipyard
4	PT. Dock Bahari Nusantara
5	PT. Mariana Bahagia
6	Pahala Harapan Lestari
7	PT. Dock & Perkapalan Air Kantong
8	PT Steadfast
9	PT. Muara Kembang
10	PT. Industri Kapal Indonesia
11	DUMAS
12	PT. Dok Perkapalan Surabaya
13	ADILUHUNG
14	PT. Yasa Wahana Tirta Samudera
15	PT. Janata Marina Indah
16	CAPUTRA MITRASEJATI （Evaluate after visit shipyard on 11th July）

- The Working Group will deliver the Application Guideline for the training by 20 July, 2022 and accept application documents of candidates until 5 Aug, 2022.
- The Working Group will select a maximum of 40 personnel for the trainings by 22 Aug, 2022 following the above-mentioned criteria.

Output 3: Understanding of how to introduce efficient shipbuilding procedures and production management methods customized for each shipyard is deepened.

- N/A

1-3 Achievement of Output

Both parties determined the verifiable indicators which were required to be specified as shown in the Table below.

Output/Indicators	Achievement (%)	Major Results	Status*
Output 1: A system for human resource development to introduce efficient shipbuilding procedures and production management methods is prepared.			
Indicator 1-1: Training materials on shipbuilding procedures and production management (including instructor's manuals) are	-	N/A	SFT

developed.			
Indicator 1-2. Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) is developed.	-	N/A	SFT
Output 2: Training participants' competence in shipbuilding procedures and production management is improved.			
Indicator 2-1: More than 75% of training participants complete the whole training.	-	N/A	SFT
Output 3: Understanding of how to introduce efficient shipbuilding procedures and production management methods customized for each shipyard is deepened.			
Indicator 3-1: More than 50% of the shipyards that participated in the training develop the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans.	-	N/A	SFT
Indicator 3-2: More than 50% of shipbuilding engineers at each shipyard attend the presentation/seminar of the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans	-	N/A	SFT

*OT: On Time, SFT: Scheduled for later, DL: Delay

1-4 Achievement of the Project Purpose

Project Purpose / Indicators	Achievement (%)	Remarks	Expected Time of achievement
Project Purpose: A human resource development system is established to introduce efficient shipbuilding procedures and production management methods at shipyards in Indonesia.			
Indicator 1: Human resource development plan (2024-2026) (including implementation structure,	-	N/A	by XX

training plan, budget measures, etc.) is approved by MOI and IPERINDO			
Indicator 2: Training materials are adopted by MOI and IPERINDO	-	N/A	by XX
Indicator 3: At more than 50% of the shipyards that participated in the training, the draft documents (customized shipbuilding procedure & production management method, facilities / equipment plans and internal human resource development plans) are responded by the management level of each company.	-	N/A	by XX

1-5 Changes of Risks and Actions for Mitigation

N/A

1-6 Progress of Actions undertaken by JICA

- The Consultant Contract for Component 2 (technical cooperation for human resource development and capacity building for Indonesian shipbuilding industry) under the Project between the MES TOKKI & Engineering Co., Ltd. (MES) and JICA was signed in April 2022.
- Mr. Keita Izumi, in charge of the Project of JICA HQ visited Indonesia to attend the 1st JCC in July 2022.

1-7 Progress of Actions undertaken by Gov. of Indonesia

- MOI and IPERINDO allocated counterpart personnel, furnished the Project office for Japanese experts with necessary facilities such as desks, chairs.

1-8 Progress of Environmental and Social Considerations (if applicable)

N/A

1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

N/A

1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

N/A

2 Delay of Work Schedule and/or Problems (if any)

2-1 Detail

- The activities for C2 have been commenced on 17 May, 2022 when the JICA Short-term Experts Team for C2 to Indonesia was dispatched one month behind the original schedule of April 2022. In this regard, the both parties agreed to extend one-month period until 23 May, 2024, whose project duration will be ninety one (91) months in total from 24 Oct, 2016.

2-2 Cause

- The signing of 6th Amendment of R/D was made on 20 January, 2022, which was three months behind the expected schedule.

2-3 Action to be taken

- The extension of project duration will be made by amendment of R/D including the Project Design Matrix (PDM) and Plan of Operation (PO) agreed between both parties after JICA's internal procedures.

2-4 Roles of Responsible Persons/Organization (JICA, Gov. of Djibouti,etc.)

N/A

3 Modification of the Project Implementation Plan

3-1 PO

PO of the Project was updated as per the attached of Monitoring Sheet Form 3-3.

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

N/A

4 Current Activities of Gov. of xx to Secure Project Sustainability after its Completion

N/A

II. Project Monitoring Sheet I & II *as Attached*

5-2 Monitoring Sheet Ver.2（Term: July 2022- Dec, 2022）

TO CR of JICA INDONESIA OFFICE

Project Monitoring Sheet

Project Title : The Project for the Indonesian Shipbuilding Industry Modernization
Version of the Sheet: Ver.2（Term: July 2022- Dec, 2022）

Name: Mr. Ir. R. Hendro Martono
Title: Project Director
Name: ODA Yoichi
Title: Shipbuilding Policy and Technical Advisor
Submission Date: 8 Jan, 2023

I. Summary

1　Progress

1-1 Progress of Inputs

<table>
<tr><th>Input</th><th>Plan (January 2022)</th><th>Actual (20 December 2022)</th></tr>
<tr><td colspan="3">Japanese Side</td></tr>
<tr><td>Experts</td><td><Long Term Expert>
10) Shipbuilding Policy and Technical Advisor
<Short Term Experts>
11) Shipyard Management
12) Shipbuilding Plan / Material Control
13) Design / Product Design (General / Shell expansion)
14) Hull Construction Engineering (including Accuracy Control)
15) Outfitting Engineering (Hull / Machinery / Electric)
16) Welding Engineering / Painting Engineering
17) Quality Control
18) Safety Control and Environmental Measures</td><td>Total MM: 83.6MM
4) Shipbuilding Policy and Technical Advisor
<table>
<tr><th>MM</th><th>Period</th><th>Name</th></tr>
<tr><td>67.0</td><td>24 Oct 2016 - 23 May 2022</td><td>Mr. TAKINO Seiichi</td></tr>
<tr><td>7.5</td><td>16 May 2022 -</td><td>Mr. ODA Yoichi</td></tr>
</table>
Note: Mr. Takino temporary stayed in Japan from 28 March 2020 to 19 March 2021 and worked remotely due to the COVID-19 pandemic.
5) Team Leader / Shipyard Management
<table>
<tr><th>MM</th><th>Period</th><th>Name</th></tr>
<tr><td>0.5</td><td>1 June – 13 July2022-</td><td rowspan="3">Mr. DOI Hirofumi</td></tr>
<tr><td>1.5</td><td>6 Sep-21 Oct 2022</td></tr>
<tr><td>1.1</td><td>4 Nov-9 Dec 20</td></tr>
</table>
6) Other Experts
<table>
<tr><th>Field</th><th>MM</th><th>Period</th><th>Name</th></tr>
<tr><td>Shipbuilding Plan / Material Control</td><td>0.5</td><td>18 June 2022 -</td><td>Mr. Araki Nobuaki</td></tr>
<tr><td>Hull Construction Engineering</td><td>0.5</td><td>6 Sep-19 Oct 2022</td><td>Mr. NAKATA Kenji</td></tr>
<tr><td>Shipbuilding Engineering Management</td><td>0.5</td><td>18 June 2022 -</td><td>Mr. SAKAI Hiroshi</td></tr>
<tr><td>Design</td><td>1.5</td><td>4 Nov-9 Dec 20 -</td><td>Mr. HIRUMA Takuro</td></tr>
<tr><td>Design</td><td>1.5</td><td>4 Nov-9 Dec 20</td><td>Mr. NAGASE</td></tr>
<tr><td>Production Design (General,Curve)</td><td>1.5</td><td>4 Nov-9 Dec 20 -</td><td>Mr. INOUE Hirotaka</td></tr>
</table></td></tr>
<tr><td>Equipment</td><td>- N/A</td><td>- N/A</td></tr>
</table>

<table>
<tr><td>Training</td><td>- Training in Indonesia</td><td>1) Training in Indonesia
1st Phase (19th Sep-14th Oct)
・Surabaya The training in Surabaya was done in 19-30 Sep
・Jakarta The training in Jakarta was done in 3-14 Oct
2nd Phase (7th Nov-2nd Dec)
・Surabaya The training in Surabaya was done in 7-18 Nov
・Jakarta The training in Jakarta was done in 21 Nov -2 Dec
Shipyard training:
A) Shipyard in Lombok(14-18 Nov)
B) Shipyard in Medan (29 Nov-2 Dec)
Shipyard lecture during management review
Surabaya: DUMAS & Adhiluhung
Jkarta :DKB & SMI</td></tr>
<tr><td>Presentation</td><td>Presentation on Holistic system improvement(Flow management) Requested by IPERINDO..</td><td>Presentation on Holistic system improvement(Flow management) was done at IPERINDO seminar held in LOMBOK 8th Dec.</td></tr>
<tr><td colspan="3"><u>Indonesian Side</u></td></tr>
<tr><td>Counterpart</td><td>- Project Director
- Project Manager
- Secretariat
- Assistant to the Project Manager
- Training Partners</td><td>- Project Director
Mr. Ir. R. Hendro Martono, Director of Directorate of Maritime, Transportation & Defense Equipment Industries, MOI
- Project Manager
Mr. Andi Komara, Deputy Director of Maritime Industry, MOI
- Secretariat
<table>
<tr><th></th><th>Name</th></tr>
<tr><td>1</td><td>Sungkono (Head of Secretariats)</td></tr>
<tr><td>2</td><td>Kevin Theodore Putra Iroth</td></tr>
<tr><td>3</td><td>John Samuel Saragih</td></tr>
<tr><td>4</td><td>Yuli Yati Karolina</td></tr>
</table>
- Assistant to the Project Manager
<table>
<tr><th></th><th>Name</th></tr>
<tr><td>1</td><td>Ihsan Mahyudin</td></tr>
<tr><td>2</td><td>Moch Moenir</td></tr>
<tr><td>3</td><td>Tjahjono Roesdianto</td></tr>
<tr><td>4</td><td>Edy Widarto</td></tr>
</table>
- Training Partners appointed by IPERINDO
<table>
<tr><th></th><th>Name</th></tr>
<tr><td>1</td><td>Didid Mirjanto</td></tr>
<tr><td>2</td><td>Suhandoko</td></tr>
<tr><td>3</td><td>Herman Prasetyo</td></tr>
</table></td></tr>
</table>

		4 Edy Widarto 5 Mochamad Zaed Yuliadi 6 Andi Setiawan 7 Soeharto 8 Budi Santosa 9 Turitan Indaryo 10 Toni Martino 11 Djoko Sutejo 12 Trimunas Prijanto
Project office	Project office for Japanese experts with necessary facilities (desks, chairs, internet access)	Project office for Japanese experts with necessary facilities (desks, chairs, internet access) was provided. Jakarta: MOI Surabaya: KAMPUH Academy（Prepared by MTE）
Training facilities	Provision of necessary facilities for training (lecture room, equipment, etc.) for lecture.	Surabaya: KAMPUH ACADEMY Jakarta: PIDI

1-2 Progress of Activities

Overall

[Component 1]

- The Analytical work and policy advice to the MOI listed below were done by the JICA expert to develop policy in the shipbuilding sectors in Indonesia.
  1 JICA long-term expert explained to the MOI about the maritime zero emission policy of Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT), showing the material 'Roadmap to Zero Emission from International Shipping' because it was requested by the MOI.
  2 MOI and JICA long-term expert exchanged views about handling the internship program for Indonesian welders by The Cooperative Association of Japan Shipbuilders (CAJS).
  (In spring of 2022, the restrictions on entry into Japan under COVID19 were lifted, and the internship program was implemented from May to August in 2022. CAJS had 10 Indonesian interns, 8 of whom had been hired by the company implementing the internship and are already working there.)
  3 Before 'The Indonesia-Japan Business Matching Forum in Jakarta' was held by Japan Ship Machinery & Equipment Association (JSMEA) dated 17th November, JICA long-term expert explained to the MOI that if Indonesian shipbuilders and Japanese ship machinery manufacturers individually strengthened their cooperation, the whole Indonesian shipbuilding industry would develop. This resulted in the Director-General ILMATE of

MOI speaking at the Forum, and he emphasized the need for cooperation between the Japanese ship machinery industry and the Indonesian shipbuilding industry.

- Also, valuable information was provided to the MOI and IPERINDO as below.
  1 On 8th December, at the Annual National Convention of IPERINDO, JICA long-term expert made a presentation on the introduction of efficient construction procedures and production management methods at Indonesian shipyards. The executives of IPERINDO and the director of MOI also attended the convention. They showed a strong interest in the contents of this presentation and expressed their support for the ongoing shipbuilding training course.
  2 JICA long-term expert explained to the MOI about current countermeasures for the green transformation (GX) and the digital transformation (GX) by the Japanese maritime cluster (including Japanese government, shipping industry, shipbuilding industry, ship machinery industry, research organizations and financial organizations etc.) showing the material developed by the Japan Foundation.
  3 JICA long-term expert explained to the MOI about outline of Japanese shipbuilding industry and current situation of shipbuilding industry in the world, showing materials developed by MLIT.

- In addition, the advice and information should be provided in the future as shown in the Addendum.

[Component 2]

- After the MTE team returned to Japan, Mr. Oda of JICA and Mr. Didid and Mr. Suhandoco conducted the baseline survey as additionally requested. Educational materials were prepared for the first phase training. Management part (including Thinking Process), Shipbuilding Planning and Shipbuilding Technology were the contents of the educational materials.
- Phase 1 training was conducted in Surabaya and Jakarta. The challenge was to improve educational efficiency by sharing educational materials on the website and distributing them via ZOOM. The training materials were prepared in Indonesian with PPT and narration, which is expected to have the following effects.
- ・The educational materials were prepared with Indonesian PPTs and narrations, so that we could efficiently and effectively share the knowledge and educational guidelines of the Indonesian training partners.
- ・Realization of a leading instructional environment for Indonesian training partners
- ・Effective learning of participants

-
- A questionnaire survey was conducted on the level of understanding and future expectations of the participants after the management part and the Japanese engineering training, which confirmed their understanding of the important cash-flow oriented management and their desire for continuous training in the future. The survey also confirmed that while interest in Japanese engineering education is high, management is a priority. Materials for Phase 2 training were developed. Management Partial Review, Design, Production Design (General, Curve)The second phase of training was conducted in Surabaya and Jakarta. Based on the results of the first phase questionnaire, all participants visited shipyards to learn about management, and training was conducted at shipyards in parallel with engineering lectures in Japan.
-
- At the end of the second phase, a group meeting was held with the participants in Jakarta and the following two questions were asked
- 1: What did we learn?
- 2: What should we do next?
- The importance of management (effectiveness of flow management and key points of management) was understood and the items to be done in the future for implementation were answered. A very positive situation was elicited.
-
- In addition, during the onsite training at the shipyards, resistance to the new paradigm or concerns about its implementation were identified, contributing to the improvement of the educational knowledge and skills of not only the shipyards but also the training partners. The importance of further training of training partners (those who teach) was reaffirmed. Positive feedback on the training was received from IPERINDO officers attending the training in Jakarta. As a result, IPERINDO issued a request for a management education presentation at IPERINDO's seminar to be held on December 8 (attended by MOI, BPSMDI, IPERINDO, Navy, and maritime officials), which was implemented. (Recommendation for overall optimization of the system through flow management)
- The presentation generated a positive exchange of opinions among the participants and further expectations for future management education from Ibu ANITA, President of IPERINDO.
-
- The Monitoring Sheets were submitted to JICA Indonesia Office as follows:

	Submission Date
The Monitoring Sheet ver.1 (June 2022)	7 July 2022

Output 1: A system for human resource development to introduce efficient shipbuilding procedures and production management methods is prepared.

- The JICA Expert Team (Mr. Oda Mr. Didid & Mr. Suhandoko) conducted the baseline survey which could not be done before MTE teams. The ship building companies visited and interviewed by the Team were listed below.

No.	Name of Shipbuilding Companies	Date of Visit
1	PT. Dock & Perkapalan Kodja Bahari	24 May
2	PT Daya Radar Utama	25 May
3	PT Noahtu Shipyard	30 May
4	PT. Dock Bahari Nusantara	2 June
5	PT. Mariana Bahagia	6 June
6	PT. Pahala Harapan Lestari	8 June
7	PT. Dock & Perkapalan Air Kantung	11 June
8	PT Steadfast Marine	13 June
9	PT. Muara Kembang	16 June
10	PT. Industri Kapal Indonesia	20 June
11	PT. Dumas Tanjung Perak Shipyard	23 June
12	PT. Dok Perkapalan Surabaya	23 June
13	PT. Adiluhung Sarana Segara Indonesia	24 June
14	PT. Yasa Wahana Tirta Samudera	30 June
15	PT. Janata Marina Indah	30 June
16	PT. Caputra Mitrasejati	22 July
17	PT. Samudra Marine Indonesia	13 July
18	PT. Patria Maritim Perkasa	31 August
19	PT. PAL Indonesia	Cancel
20	PT. Orela Shipyard	26 July
21	PT Dukuh Raya Shipyard	2 September

1.1 To collect information on shipbuilding procedures and production management in the target shipyards to understand the technical level and problems.

The summary of the said information was collected during the baseline survey as follows.

- The work period for shipbuilding (Lead Time) tends to be extended due to insufficient resources and delayed materials, while the payment schedule for procurement of law materials and other cost was advanced, which lead to deteriorate cash flows.
- Lack of understanding of the relationship between cash flow and companies' activities, which is one of the keys to ensure the corporate continuity.
  (Not changed even though additional baseline survey)

1.2 To assess the current status of shipbuilding procedures and production management in the target shipyards and identify issues.

The summary of assessment and issues observed by the baseline survey are as follows.

- It is required to shorten the Lead Time in order to improve cash flows, and to introduce overall optimization method for shipbuilding system.
- There is need for capacity development activities, such as training programs to realize this

overall optimization.
(Not changed even though additional baseline survey)

1.3 To identify the current delivery date and shipbuilding schedule at the target shipyards.

The summary of delivery date and schedule was collected during the baseline survey as follows.

- The work period for shipbuilding (Lead Time) tends to be extended due to insufficient resources and delayed materials, while the payment schedule for procurement of law materials and other cost was advanced, which lead to deteriorate cash flows.
- Confirmed cancelled projects due to late delivery
  (Not changed even though additional baseline survey)

1.4 To prepare training plans on standard shipbuilding procedures and production management based on the result of Activities 1.1-1.3

- The Application Guidelines for Training Programs including training plans is drafted and to be finalized by 13 July, 2022, which was done.
  And further, educational content continues to provide education appropriate to the learning progress of the participants by searching questionnaires.

Output 2: Training participants' competence in shipbuilding procedures and production management is improved.

2.1 To determine the target shipyards and select the training participants.

- The Working Group agreed to the nominee qualifications both for shipyards and participants for the trainings as the follows.
  <Nominee Qualification for Shipyards>
  Applying companies are required to;
  (i) be a member company of IPERINDO,
  (ii) have experience of new shipbuilding,
  (iii)have willingness to carry out company (system) productivity improvement, and
  (iv)be shared by domestic capital, in principle.
  Applying companies are desirable to;
  (v) have at least 100 employees (including subcontracting)<Nominee Qualification for Participants>
  Applying personnel is required to;
  (i) the one is to be a manager / the other is to be head of shipbuilding engineers, and
  (ii) have more than three (3) years of practical experience in shipbuilding engineering field with basic command of English.
- The seventeen (17) participating shipbuilding companies were tentatively selected by the

Working Group following the above-mentioned qualification as listed in the table below.

No.	Name of Shipbuilding Companies
1	PT. Dock & Perkapalan Kodja Bahari
2	PT Daya Radar Utama
3	PT Noahtu Shipyard
4	PT. Dock Bahari Nusantara
5	PT. Mariana Bahagia
6	PT. Pahala Harapan Lestari
7	PT. Dock & Perkapalan Air Kantung
8	PT Steadfast Marine
9	PT. Muara Kembang
10	PT. Industri Kapal Indonesia
11	PT. Dumas Tanjung Perak Shipyard
12	PT. Dok Perkapalan Surabaya
13	PT. Adiluhung Sarana Segara Indonesia
14	PT. Yasa Wahana Tirta Samudera
15	PT. Janata Marina Indah
16	PT.Dukuh Raya Shipyard
17	PT.Waruna Shipyard Indonesia

Output 3: Understanding of how to introduce efficient shipbuilding procedures and production management methods customized for each shipyard is deepened.

Through shipbuilding production management education, the definition of productivity was shared, and it was learned that productivity improvement is not about improving (shortening) value-added activity time, but about removing waste time that is overflowing in the system. They also understood through the hands-on simulation that this wastage is caused by the increased input of work into the system. Therefore, they understood that limiting the amount of work input into the system is an important management action. However, it is necessary to discuss whether the flow management education should be implemented or not.

Through the education of logistics of shipbuilding, hull design and hull outfitting, They understood what they needed to do to make their shipyard work more efficiently.

1-3 Achievement of Output

Both parties determined the verifiable indicators which were required to be specified as shown in the Table below.

Output/Indicators	Achievement (%)	Major Results	Status*
Output 1: A system for human resource development to introduce efficient shipbuilding procedures and production management methods is prepared.			
Indicator 1-1: Training materials on shipbuilding procedures and production management (including instructor's manuals) are developed.	-	Some parts of training materials, including production management, logistics of shipbuilding, hull design and hull outfitting, are developed.	SFT

Indicator 1-2. Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) is developed.	-	N/A	SFT
Output 2: Training participants' competence in shipbuilding procedures and production management is improved.			
Indicator 2-1: More than 75% of training participants complete the whole training.	-	N/A	SFT
Output 3: Understanding of how to introduce efficient shipbuilding procedures and production management methods customized for each shipyard is deepened.			
Indicator 3-1: More than 50% of the shipyards that participated in the training develop the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans.	-	N/A	SFT
Indicator 3-2: More than 50% of shipbuilding engineers at each shipyard attend the presentation/seminar of the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans	-	N/A	SFT

*OT: On Time, SFT: Scheduled for later, DL: Delay

1-4 Achievement of the Project Purpose

Project Purpose / Indicators	Achievement (%)	Remarks	Expected Time of achievement
Project Purpose: A human resource development system is established to introduce efficient shipbuilding procedures and production management methods at shipyards in Indonesia.			
Indicator 1: Human resource development plan (2024-2026) (including implementation structure,	-	N/A	by XX

training plan, budget measures, etc.) is approved by MOI and IPERINDO			
Indicator 2: Training materials are adopted by MOI and IPERINDO	-	N/A	by XX
Indicator 3: At more than 50% of the shipyards that participated in the training, the draft documents (customized shipbuilding procedure & production management method, facilities / equipment plans and internal human resource development plans) are responded by the management level of each company.	-	N/A	by XX

1-5 Changes of Risks and Actions for Mitigation

Efforts were made with training partners to identify participants' concerns and to incorporate necessary activities into the training as needed, and efforts were made with training partners to turn negative educational outcomes into positive ones.

1-6 Progress of Actions undertaken by JICA

- The Consultant Contract for Component 2 (technical cooperation for human resource development and capacity building for Indonesian shipbuilding industry) under the Project between the MES TOKKI & Engineering Co., Ltd. (MES) and JICA was signed in April 2022.
- Mr. Keita Izumi, in charge of the Project of JICA HQ visited Indonesia to attend the 1st JCC in July 2022.
- Amended version of 'Minutes of Meetings between MOI and JICA' was signed in September 2022, to extend one-month period until 23 May 2024.

1-7 Progress of Actions undertaken by Gov. of Indonesia

- MOI and IPERINDO allocated counterpart personnel, furnished the Project office for Japanese experts with necessary facilities such as desks, chairs.
- MOI and IPERINDO made the necessary arrangements to determine training participants.

1-8 Progress of Environmental and Social Considerations (if applicable)

N/A

1-9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

N/A

1-10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

After confirming information on the difficulty of securing budget for this education project on the Indonesian side in 2023, we also met with the ANDI project manager from the Ministry of Industry, and it became necessary to consider an optimized schedule for the education project in Indonesia with the current budget. The management training, which is the foundation for productivity improvement, had been completed, and it was time to implement actual guidance on actual implementation at shipyards, etc. It was time to reduce the number of participants gathering in Jakarta and Surabaya and to promote local guidance. We will request MTE to consider this matter.

2 Delay of Work Schedule and/or Problems (if any)

2-1 Detail

- The activities for C2 have been commenced on 17 May, 2022 when the JICA Short-term Experts Team for C2 to Indonesia was dispatched one month behind the original schedule of April 2022. In this regard, the both parties agreed to extend one-month period until 23 May, 2024, whose project duration will be ninety one (91) months in total from 24 Oct, 2016. As a result of this agreement, amended version of 'Minutes of Meetings between MOI and JICA' was signed in September 2022

2-2 Cause

- The signing of 6th Amendment of R/D was made on 20 January, 2022, which was three months behind the expected schedule.

2-3 Action to be taken

- Already implemented.

2-4 Roles of Responsible Persons/Organization (JICA, Gov. of Djibouti,etc.)

N/A

3 Modification of the Project Implementation Plan

3-1 PO

PO of the Project was updated as per the attached of Monitoring Sheet Form 3-3.

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

N/A

4 Current Activities of Gov. of xx to Secure Project Sustainability after its Completion

N/A

II. Project Monitoring Sheet I & II *as Attached*

Addendum

The advice and information should be provided to the MOI in the future as below.

◎ Policy advises and discussion

1 Consultation of needs of Indonesian shipbuilding companies supported by JICA after the ongoing training course

2 Arrangement of the roles of MOI and IPERINDO to the shipbuilding industry

◎ Information provision

1 Effort status of Japanese government and ClassNK concerning the Ship Recycling Convention

2 Situation concerning the ship brokers in the world

3 Policy of the Japanese government on the foreign technical intern trainee

5-3 Monitoring Sheet Ver.3（Term: Jan 2023- Jun 2023）

TO CR of JICA INDONESIA OFFICE

Project Monitoring Sheet

Project Title : The Project for the Indonesian Shipbuilding Industry Modernization
Version of the Sheet: Ver.3（Term: Jan 2023- Jun 2023）

Name: Mr. Ir. R. Hendro Martono
Title: Project Director
Name: ODA Yoichi
Title: Shipbuilding Policy and Technical Advisor
Submission Date: 31 Jul 2023

I. Summary

1　Progress

1-1 Progress of Inputs

Input	Plan (January 2022)	Actual (End of June 2022)
Japanese Side		
Experts	<Long Term Expert> 19) Shipbuilding Policy and Technical Advisor <Short Term Experts> 20) Shipyard Management 21) Shipbuilding Plan / Material Control 22) Design / Product Design (General / Shell expansion) 23) Hull Construction Engineering (including Accuracy Control) **24) Outfitting Engineering (Hull / Machinery / Electric)** **25) Welding Engineering / Painting Engineering** **26) Quality Control** 27) Safety Control and Environmental Measures	Total MM: 74MM 7) Shipbuilding Policy and Technical Advisor MM / Period / Name 7.0 / 24 Oct 2016 - 23 May 2022 / Mr. TAKINO Seiichi 7.5 / 16 May 2022 - / Mr. ODA Yoichi Note: Mr. Takino temporary stayed in Japan from 28 March 2020 to 19 March 2021 and worked remotely due to the COVID-19 pandemic. 8) Team Leader / Shipyard Management MM / Period / Name 0.5 / 1 Julu – 13 July2022- / Mr. DOI Hirofumi 1.5 / 6 Sep-21 Oct 2022 1.1 / 4 Nov-9 Dec 20 1.0 / 27 Feb-27 Mar 1.0 / 22 May-23 Jun 9) Other Experts Field / MM / Period / Name Hull Construction Engineering / 0.5 / 6 Sep-19 Oct 2022 / Mr. NAKATA Kenji Shipbuilding Engineering Management / 0.5 / 18 June 2022 - / Mr. SAKAI Hiroshi Design / 1.5 / 4 Nov-9 Dec 20 - / Mr. HIRUMA Takuro Production Design (General,Curve) / 1.5 / 4 Nov-9 Dec 20 - / Mr. INOUE Hirotaka Outfitting Engineering (Hull / 1.0 / 27 Feb-27 Mar / Mr. Yamada Masaaki

			/ Machinery / Electric)			Mr.Kuniyoshi Ken Mr.Hasegawa Satoshi
			Welding Engineering / Painting Engineering Quality Control	1.0	22 May-23 Jun	Mr.Okada Naohiro Mr.Kojima Takenori Mr.Nagase Yutaka
Equipment	- N/A	- N/A				
Training	- Training in Indonesia	1)　Training in Indonesia 1st Phase (19th Sep-14th Oct) ・Surabaya　The training in Surabaya was done in 19-30 Sep ・Jakarta　The training in Jakarta was done in 3-14 Oct 2nd Phase (7th Nov-2nd Dec) ・Surabaya　The training in Surabaya was donein 7-18 Nov ・Jakarta　The training in Jakarta was done in 21 Nov -2 Dec Shipyard training: C)　Shipyard in Lombok(14-18 Nov) D)　Shipyard in Medan (29 Nov-2 Dec) Shipyard lecture during management review Surabaya: DUMAS & Adhiluhung Jkarta　:DKB & SMI 【2023/JAN-JUN】 3rd Phase(27th Feb-27th Mar) (Offline & Online Mix schedule) ・Surabaya　The training in Surabaya was done in 27 Feb-10 Mar (Off-line & On-line) ・Jakarta　The training in Jakarta was done in 13-27 Mar(Off-line & On-line) 4th Phase(22nd May -23rd Jun) (Offline & Online Mix schedule) ・Surabaya　The training in Surabaya was done in 22 May-6 Jun (Off-line & On-line) ・Jakarta　The training in Jakarta was done in 12-23 Jun(Off-line & On-line)			

Indonesian Side

Counterpart	- Project Director - Project Manager - Secretariat - Assistant to the Project Manager - Training Partners	- Project Director Mr. Ir. R. Hendro Martono, Director of Directorate of Maritime, Transportation & Defense Equipment Industries, MOI - Project Manager Mr. Andi Komara, Deputy Director of Maritime Industry, MOI - Secretariat

	Name
1	Sungkono (Head of Secretariats)
2	Kevin Theodore Putra Iroth
3	John Samuel Saragih
4	Yuli Yati Karolina

- Assistant to the Project Manager

	Name
1	Ihsan Mahyudin
2	Moch Moenir
3	Tjahjono Roesdianto
4	Edy Widarto

- Training Partners appointed by IPERINDO

	Name
1	Didid Mirjanto
2	Suhandoko
3	Herman Prasetyo
4	Edy Widarto
5	Mochamad Zaed Yuliadi
6	Andi Setiawan
7	Soeharto
8	Budi Santosa
9	Turitan Indaryo
10	Toni Martino
11	Djoko Sutejo
12	Trimunas Prijanto

Project office	Project office for Japanese experts with necessary facilities (desks, chairs, internet access)	Project office for Japanese experts with necessary facilities (desks, chairs, internet access) was provided. Jakarta: MOI Surabaya: KAMPUH Academy（Prepared by MTE）
Training facilities	Provision of necessary facilities for training (lecture room, equipment, etc.) for lecture.	Surabaya: KAMPUH ACADEMY Jakarta: PIDI

1-2 Progress of Activities

Overall

[Component 1]

- The Analytical work and policy advice to the MOI listed below were done by the JICA expert to develop policy in the shipbuilding sectors in Indonesia.
  1 JICA long-term expert explained to the MOI about the maritime zero emission policy of Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT), showing the material 'Roadmap to Zero Emission from International Shipping' because it was requested by the MOI.　[Ongoing]
  2 MOI and JICA long-term expert exchanged views about handling the internship program for Indonesian welders by The Cooperative Association of Japan Shipbuilders (CAJS). [Ongoing]
  3 Prior to the training in Japan in July-August 2023, JICA experts explained the purpose and content of the training in detail to MOI. JICA experts also explained that MOI shipbuilding officials and BPSDMI officials should also participate in the Japan training in order to formulate future shipbuilding policies and to consider requesting further assistance from Japan in the future. As a result, two people from MOI also decided to participate.
- In addition, the advice and information should be provided in the future as shown in the Addendum.

[Component 2]

【2023/JAN-JUN】

On January 24, an online meeting (ZOOM) was held to discuss changes to the project's schedule of activities due to a reduction in the 2023 executive budget of the Indonesian Ministry of Industry. As a result of the consultation, one week of training in Jakarta and Surabaya area for Phase 3 and 4 will be face-to-face training as before, and the latter week will be online training. In addition, Phase 5 was postponed to March 2024 for face-to-face training.

The training was conducted according to the new schedule requested by the Indonesian Ministry of Industry, with the third phase conducted from February to March and the fourth phase from May to June, using two methods, OFF-LINE and ON-LINE. Preparations for the training in Japan scheduled to take place in July/August were also started. Although it was difficult to decide on the destination of the training in such a short period of time, we were able to make the necessary arrangements.

Productivity improvement requires a transformation from the traditional paradigm to a new paradigm. (For example, the "traditional paradigm" refers to the pursuit of cost reduction, and the "new paradigm" refers to the pursuit of shorter lead times.) Managers have the invisible dilemma of seeking change but resisting change at the same time. The baseline survey confirmed that this is the case for Indonesian shipbuilding managers, including Ms. Anita, Chairman of IPERINDO. This should be considered the biggest challenge in this educational project. As the management training progressed, participants began to clearly understand the differences in paradigms over time. This situation made the aforementioned management dilemma problem acute. How to smoothly break through the management dilemma was discussed during the training, and Mr. Agus, a participant and board member of IPERINDO, made an excellent suggestion that this improvement could be made into a rule in the form of a standard, which would greatly reduce the resistance to implementation. In the third phase, a standard for improvement was quickly developed, and training was conducted to review and evolve the productivity improvements to date based on this standard. Training was conducted over the third and fourth phases to obtain management's agreement and to create and implement a presentation of the proposal to management to break through management's dilemma. Improvement is a powerful weapon to realize a bigger vision for the future, and we trained the client on this implementation proposal using AMBITIOUS TARGET, a framework for a thought process, in preparation for the follow-up that was to follow later in the process.

1-3 Achievement of Output

Both parties determined the verifiable indicators which were required to be specified as shown in the Table below.

Output/Indicators	Achievement (%)	Major Results	Status*
Output 1: A system for human resource development to introduce efficient shipbuilding procedures and production management methods is prepared.			
Indicator 1-1: Training materials on shipbuilding procedures and production management (including instructor's manuals) are developed.	-	N/A	SFT
Indicator 1-2. Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) is developed.	-	N/A	SFT

Output 2: Training participants' competence in shipbuilding procedures and production management is improved.			
Indicator 2-1: More than 75% of training participants complete the whole training.	-	N/A	SFT
Output 3: Understanding of how to introduce efficient shipbuilding procedures and production management methods customized for each shipyard is deepened.			
Indicator 3-1: More than 50% of the shipyards that participated in the training develop the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans.	-	N/A	SFT
Indicator 3-2: More than 50% of shipbuilding engineers at each shipyard attend the presentation/seminar of the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans	-	N/A	SFT

*OT: On Time, SFT: Scheduled for later, DL: Delay

1-4 Achievement of the Project Purpose

Project Purpose / Indicators	Achievement (%)	Remarks	Expected Time of achievement
Project Purpose: A human resource development system is established to introduce efficient shipbuilding procedures and production management methods at shipyards in Indonesia.			
Indicator 1: Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) is approved by MOI and IPERINDO	-	N/A	by XX
Indicator 2: Training materials	-	N/A	by XX

are adopted by MOI and IPERINDO			
Indicator 3: At more than 50% of the shipyards that participated in the training, the draft documents (customized shipbuilding procedure & production management method, facilities / equipment plans and internal human resource development plans) are responded by the management level of each company.	-	N/A	by XX

2 Delay of Work Schedule and/or Problems (if any)

N/A

3 Modification of the Project Implementation Plan

N/A

4 Current Activities of Gov. of xx to Secure Project Sustainability after its Completion

N/A

Addendum

The advice and information should be provided to the MOI in the future as below.

◎ Policy advises and discussion

1 MOI expects JICA to plan a follow-up project after the ongoing project. And also, one of the trainees commented that human resource development for Indonesian ship equipment manufacturers is also necessary for the development of the shipbuilding industry. Considering this situation, JICA long-term expert should consult with MOI and IPERINDO about the needs to continue support by JICA on Indonesian shipbuilding industry.

2 In addition to the matter above, JICA long-term expert should advise about the arrangement of the roles of MOI and IPERINDO to the shipbuilding industry.

◎ Information provision

1 JICA long-term expert should provide information on the countermeasures of Japanese government and ClassNK regarding the International Ship Recycling Convention. This is because the Convention is closely related to the shipbuilding industry, as it promotes the scrapping of old ships, leads to an increase in demand for new ships, and mandates the preparation of inventory lists of new ships.

2 JICA long-term expert should provide information on the situation concerning the ship brokers in the world.

3 JICA long-term expert should provide information on the policy by Japanese government regarding the foreign technical intern trainee.

5-4 Monitoring Sheet Ver.4 (Term: July 2023- Dec 2023)

TO CR of JICA INDONESIA OFFICE

Project Monitoring Sheet

Project Title : The Project for the Indonesian Shipbuilding Industry Modernization
Version of the Sheet: Ver.4（Term: July 2023- Dec 2023）

Name: Mr. Ir. R. Hendro Martono
Title: Project Director
Name: ODA Yoichi
Title: Shipbuilding Policy and Technical Advisor
Submission Date: 10 Jan 2024

I. Summary

1 Progress

1-1 Progress of Inputs

<table>
<tr><th>Input</th><th>Plan (January 2022)</th><th>Actual (End of Dec 2023)</th></tr>
<tr><td colspan="3">Japanese Side</td></tr>
<tr><td>Experts</td><td><Long Term Expert>
28) Shipbuilding Policy and Technical Advisor
<Short Term Experts>
29) Shipyard Management
30) Shipbuilding Plan / Material Control
31) Design / Product Design (General / Shell expansion)
32) Hull Construction Engineering (including Accuracy Control)
33) Outfitting Engineering (Hull / Machinery / Electric)
34) Welding Engineering / Painting Engineering
35) Quality Control
36) Safety Control and Environmental Measures</td><td>Total MM: 99.6MM
10) Shipbuilding Policy and Technical Advisor
<table>
<tr><th>MM</th><th>Period</th><th>Name</th></tr>
<tr><td>67.0</td><td>24 Oct 2016 - 23 May 2022</td><td>Mr. TAKINO Seiichi</td></tr>
<tr><td>19.5</td><td>16 May 2022 -</td><td>Mr. ODA Yoichi</td></tr>
</table>
Note: Mr. Takino temporary stayed in Japan from 28 March 2020 to 19 March 2021 and worked remotely due to the COVID-19 pandemic.
11) Team Leader / Shipyard Management
<table>
<tr><th>MM</th><th>Period</th><th>Name</th></tr>
<tr><td>0.5</td><td>1 Jul – 13 July2022-</td><td rowspan="8">Mr. DOI Hirofumi</td></tr>
<tr><td>1.5</td><td>6 Sep-21 Oct 2022</td></tr>
<tr><td>1.1</td><td>4 Nov-9 Dec 2022</td></tr>
<tr><td>1.0</td><td>27 Feb-27 Mar 2023</td></tr>
<tr><td>1.0</td><td>22 May-23 Jun 2023</td></tr>
<tr><td>1.0</td><td>15 Sept-15 Oct 2023</td></tr>
<tr><td>1.0</td><td>05 Nov-02 Dec 2023</td></tr>
</table>
12) Other Experts
<table>
<tr><th>Field</th><th>MM</th><th>Period</th><th>Name</th></tr>
<tr><td>Hull Construction Engineering</td><td>0.5</td><td>6 Sep-19 Oct 2022</td><td>Mr. NAKATA Kenji</td></tr>
<tr><td>Shipbuilding Engineering Management</td><td>0.5</td><td>18 June 2022 -</td><td>Mr. SAKAI Hiroshi</td></tr>
<tr><td>Design</td><td>1.5</td><td>4 Nov-9 Dec 20 -</td><td>Mr. HIRUMA Takuro</td></tr>
<tr><td>Production Design (General,Curve)</td><td>1.5</td><td>4 Nov-9 Dec 20 -</td><td>Mr. INOUE Hirotaka</td></tr>
</table>
</td></tr>
</table>

		Outfitting Engineering (Hull / Machinery / Electric)	1.0	27 Feb-27 Mar	Mr. Yamada Masaaki Mr.Kuniyoshi Ken Mr.Hasegawa Satoshi
		Welding Engineering / Painting Engineering Quality Control	1.0	22 May-23 Jun	Mr.Okada Naohiro Mr.Kojima Takenori Mr.Nagase Yutaka
Equipment	- N/A	- N/A			
Training	- Training in Indonesia	1) Training in Indonesia 1st Phase (19 Sep-14 Oct 2022) ・Surabaya The training in Surabaya was done in 19-30 Sep ・Jakarta The training in Jakarta was done in 3-14 Oct 2nd Phase (7 Nov-2 Dec 2022) ・Surabaya The training in Surabaya was done in 7-18 Nov ・Jakarta The training in Jakarta was done in 21 Nov -2 Dec Shipyard training: E) Shipyard in Lombok (14-18 Nov) F) Shipyard in Medan (29 Nov-2 Dec) Shipyard lecture during management review Surabaya: DUMAS & Adhiluhung Jakarta: DKB & SMI 【2023/JAN-JUN】 3rd Phase (27 Feb-27 Mar 2023) (Offline & Online Mix schedule) ・Surabaya The training in Surabaya was done in 27 Feb-10 Mar (Off-line & On-line) ・Jakarta The training in Jakarta was done in 13-27 Mar (Off-line & On-line) 4th Phase (22 May -23 Jun 2023) (Offline & Online Mix schedule) ・Surabaya The training in Surabaya was			

<table>
<tr><td></td><td></td><td>done in 22 May-6 Jun (Off-line & On-line)
・Jakarta　The training in Jakarta was done in 12-23 Jun(Off-line & On-line)

2)　Training in Japan
・1st Party (1 July-16 July 2023)
・2nd Party (22 July-6 August 2023)
Hiroshima, Okayama, Hyogo, Tokyo and Chiba

3)　Follow Up Training in Indonesia
・1st Follow-up Visit in September 2023: Shipyards in Madura, Gresik, and Banjarmasin
・2nd Follow-up Visit in November 2023: Shipyards in Bangka and Makassar</td></tr>
<tr><td colspan="3"><u>Indonesian Side</u></td></tr>
<tr><td>Counterpart</td><td>- Project Director
- Project Manager
- Secretariat
- Assistant to the Project Manager
- Training Partners</td><td>- Project Director
Mr. Ir. R. Hendro Martono, Director of Directorate of Maritime, Transportation & Defense Equipment Industries, MOI

- Project Manager
Mr. Andi Komara, Deputy Director of Maritime Industry, MOI

- Secretariat
<table>
<tr><td></td><td>Name</td></tr>
<tr><td>1</td><td>Sungkono (Head of Secretariats)</td></tr>
<tr><td>2</td><td>Kevin Theodore Putra Iroth</td></tr>
<tr><td>3</td><td>John Samuel Saragih</td></tr>
<tr><td>4</td><td>Yuli Yati Karolina</td></tr>
</table>
- Assistant to the Project Manager
<table>
<tr><td></td><td>Name</td></tr>
<tr><td>1</td><td>Ihsan Mahyudin</td></tr>
<tr><td>2</td><td>Moch Moenir</td></tr>
<tr><td>3</td><td>Tjahjono Roesdianto</td></tr>
<tr><td>4</td><td>Edy Widarto</td></tr>
</table>
- Training Partners appointed by IPERINDO
<table>
<tr><td></td><td>Name</td></tr>
<tr><td>1</td><td>Didid Mirjanto</td></tr>
<tr><td>2</td><td>Suhandoko</td></tr>
<tr><td>3</td><td>Herman Prasetyo</td></tr>
<tr><td>4</td><td>Edy Widarto</td></tr>
</table></td></tr>
</table>

		5 Mochamad Zaed Yuliadi 6 Andi Setiawan 7 Soeharto 8 Budi Santosa 9 Turitan Indaryo 10 Toni Martino 11 Djoko Sutejo 12 Trimunas Prijanto
Project office	Project office for Japanese experts with necessary facilities (desks, chairs, internet access)	Project office for Japanese experts with necessary facilities (desks, chairs, internet access) was provided. Jakarta: MOI Surabaya: KAMPUH Academy（Prepared by MTE）
Training facilities	Provision of necessary facilities for training (lecture room, equipment, etc.) for lecture.	Surabaya: KAMPUH ACADEMY Jakarta: PIDI

1-2 Progress of Activities

Overall

- The 2nd JCC meeting was held on 21 November 2023. For preparation, an interim progress report was presented to IPERINDO prior to the meeting on 6 October, and it was highly appreciated. In addition, Mr. Yaoi of JICA Headquarters explained the process of preparing the final report and other future plans. It was also confirmed that the English version of the educational materials would be submitted to the Ministry of Industry in February 2024. He also reported that Mr. Oda, JICA long-term expert, will be in Jakarta until March 2024.

[Component 1]

- The Analytical work and policy advice to the MOI listed below were done by the JICA expert to develop policy in the shipbuilding sectors in Indonesia.

1 Jakarta Shipbuilding Seminar to be organized by MLIT in March 2024

JICA long-term expert explained to the MOI about the plan of 'Jakarta Shipbuilding Seminar' to be organized by MLIT (Japanese Ministry of Land, Infrastructure, Transport and Tourism) in March 2024. MOI would like Japanese manufacturers to provide technical support to the Indonesian side, because currently there is no support by Japanese manufacturers. Also, MOI is thinking of creating a platform for promoting foreign investment in Indonesia's shipbuilding industry and would like to welcome investment from Japan. Therefore, JICA long-term expert informed the requests of MOI to Japan arrange the Japanese presentation of the Seminar that would meet MOI's requests.

(The presentation by MOI in the Seminar will likely focus on biofuels, because it is currently difficult to transition to B40 regarding biofuels for shipping.)

2 Future JICA Shipbuilding Project

JICA long-term expert explained to the MOI about the procedure for submitting a request to start a new JICA shipbuilding project. MOI would like to propose future cooperation in the maritime industry sector starting in 2025 including Technical Assistance for Ship Repair Activity, Technical Assistance for Ship Component Industry, and Business Matching Forum. MOI also explained this proposal at the JCC Meeting (Joint Coordination Committee) in November 2023. Regarding the proposal of Business Matching Forum, JICA long-term expert will also coordinate with the Japanese government, centered on the MLIT.

3 International Ship Recycling Convention

JICA long-term expert advised to the MOI that the Ship Recycling Convention is scheduled to take effect in 2025, and that the Indonesian government should consider ratifying the Convention while analyzing the environmental policies of neighboring countries. (In the Indonesian government, the MOI, the Ministry of Transport, and the Maritime Coordination Agency are closely involved in the ratification of the convention. Currently, the Indonesian government is not proactive about the ratification. One of the reasons is that importing ships for dismantling is prohibited by Indonesian domestic law and therefore the convention cannot be ratified.)

The long-term expert also advised to the MOI that the situation of recycling yards in Indonesia should be considered when considering the formulation of a new JICA shipbuilding technology project. (The number of Indonesian shipyards that are breaking ships is increasing little by little. Because when a shipyard engages in the ship breaking business, it deepens its relationship with ship owners, which has a positive impact on ship construction and ship repair business.)

4 Green Transformation Technology

As the world shifts toward reducing CO2 emissions, shipyards around the world are developing a variety of zero-emission ships. When formulating Indonesian shipbuilding policy, it is necessary to be aware of trends in this world regarding GX (Green Transformation). JICA long-term expert explained to the MOI about the maritime zero emission policy of Japanese MLIT, showing the material ‘Shipbuilding in Japan,

Transformation'. (The contents of the material are Green Transformation and Digital Transformation in the field of shipbuilding in Japan.)

5 Employment of Indonesian Workers by Japanese Shipbuilders

JICA long-term expert explained to the MOI about the result of the analytical work on the employment of Indonesian workers by Japanese shipbuilders, including internship. That is, the number of Indonesian welders employed by Japanese shipyards is increasing, in addition, the number of Indonesian naval design engineers and machinery experts is also increasing little by little, and the demand for such welders and engineers will continue to increase.

On the Indonesian side, the education system for welders and engineers is of a high level, and there are many Japanese language education institutions. However, JICA long-term expert believes that measures to strengthen the matching system are important in order to respond to Japan's increasing demand for Indonesian employment.

And the JICA long-term expert advised to the MOI that if engineers who worked at Japanese shipyards return to Indonesia and work at Indonesian shipyards, Indonesia's technological capabilities will increase, and that MOI's policies for developing young shipbuilding personnel should take this situation into consideration.

6 Japan Training

During the training in Japan in July-August 2023, trainee visited to the National Maritime Research Institute Japan (NMRI) in Tokyo. Regarding the Institute, JICA long-term expert advised MOI and IPERINDO that the excellent research facilities in Indonesia would have a great effect on the development of technical human resources, and also would contribute to raising the level of the entire Indonesian shipbuilding industry, and that it is important to actively utilize research facilities in Indonesia such as the test tanks of ITS (Institut Teknologi Sepuluh Nopember). For example, there is a typical test tank 'Actual Sea Model Basin' at NMRI. In this test tank, waves and winds encountered in the actual sea can be reproduced with its all-round wave generators and blowers. By effective use of Indonesian research facilities, it is possible to analyze the performance of actual ships in this way.

7 Human Resource Development System

Regarding the human resource development system after the end of this Project, JICA long-term expert consulted with MOI, IPERINDO, and Japanese side, including Mr. Doi. As a

result of the consultation, it would be necessary to continue the same guidance as the follow-up training currently being conducted in this Project. And it was decided that further consultation would be continued, especially regarding the expenses such as business trip expenses from Japan to Indonesia.

[Component 2]

1 Training in Japan in July to August 2023

Two groups of the training program in Japan were conducted for two weeks each over July and the beginning of August. During the training in Japan, the participants visited shipyards, marine equipment manufacturers, laboratory, and high-efficiency repair yards to learn about opportunities for improvement. In particular, during the visit to Yanmar, the participants experienced the extremely high level of 2S3TEI (Sorting, Setting, Target location, Target item and Target quantity) that they had learned in management education, and were motivated to make improvements after returning to their home countries. The training in Japan was effective in creating teamwork in the Indonesian shipbuilding industry and in building a network of people who are willing to grow together.

During the daily follow-up time of the training in Japan, the statement targeting successful flow management at each shipyard was shared . While participant shipyards hesitated to change their way of management, many shipyards showed positive expectation to the flow-management.

2 1st Follow-up Visit in September 2023

(1) PT. Adiluhung Saranasegara Indonesia

The visit started with the Adhiluhung Shipyard in Madura on 19 September, where IPERINDO Chairman has high expectations for improvement. However, it was decided that follow-up training would be held again in March of the following year, because the preparations such as organizing the contents of the ambitious target were insufficient.

(2) PT. Orela Shipyard,

On 25 September, a successful case of flow management was reported there. The Orela Shipyard in Gresik provided a detailed discussion of best practices in flow management so that it could be clearly shared with other shipyards. These best practices had been transformed from a concern to a motivation for improvement.

(3) Interim Progress Reporting Session at PT. Kampuh Welding Indonesia

According to the request of IPERINDO, an interim progress reporting session was held on

6 October at PT. Kampuh Welding Indonesia in Surabaya, with the participation of the IPERINDO Chairman, who presented the progress including the success stories of the Orela Shipyard, which was well received.

(4) PT. Patria Maritim Perkasa

After that, the project team visited newbuilding factory of Patria Shipyard in Banjarmasin on 9 October. The market is now rapidly rising, and barges and tugboats are being built at the same time, and it was confirmed that the factory was experiencing a slow flow due to so many work-in-process. The shipyard was not able to respond to the situation, so educational materials on flow management were developed and shared with the shipyards immediately. The response to this situation will need to be reviewed at a later training session.

3 2nd Follow-up Visit in November 2023

(1) PT. Pahala Harapan Lestari

At the Pahala Shipyard in Bangka Island, where the directors were present on 6 November, they immediately experimented with flow management and succeeded in shortening Lead Time (LT), just as at the Orela Shipyard.

(2) PT. Patria

On the other hand, as with the Patria Shipyard, it was confirmed that the same improvements were needed due to the high operating conditions and rapid increase in work-in-progress. In addition, one shipyard was prevented from gaining the consent of upper management due to the belief that there was no problem with the current status quo, and communication efforts were needed for the time being.

(3) PT. Industri Kapal Indonesia (IKI)

The state-owned shipyard is currently thinking about structural reform, and the IKI Shipyard in Makassar is considering this as an opportunity to promote productivity improvement at this time. On 27 November, with the understanding of the board members, the participants have been appointed as leaders of this new movement.

1-3 Achievement of Output

Both parties determined the verifiable indicators which were required to be specified as shown in the Table below.

Output/Indicators	Achievement (%)	Major Results	Status*
Output 1: A system for human resource development to introduce efficient shipbuilding procedures and production management methods is prepared.			
Indicator 1-1: Training materials on shipbuilding procedures and production management (including instructor's manuals) are developed.	-	Category of Management: Almost done Category of JPN Engineering: Under Editing, to complete by Feb 2024.	OT
Indicator 1-2. Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) is developed.	-	Currently underway, IPERINDO side has briefed MOI and MOI is working to obtain education budget.	OT
Output 2: Training participants' competence in shipbuilding procedures and production management is improved.			
Indicator 2-1: More than 75% of training participants complete the whole training.	Almost 100%-	For 4 (out of 5) times of the trainings up to now, almost 100% of the participation rate is recorded.	OT
Output 3: Understanding of how to introduce efficient shipbuilding procedures and production management methods customized for each shipyard is deepened.			
Indicator 3-1: More than 50% of the shipyards that participated in the training develop the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans.	-	Currently underway, with a fifth phase in January of 2024 to complete the improvement process.	OT
Indicator 3-2: More than 50% of shipbuilding engineers at each shipyard attend the presentation/seminar of the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans	-	Having learned that productivity improvements are achieved through management, participants explain to management how to make improvements. The follow-up also confirmed the presence of management's high regard for the program. Each shipyard is currently preparing presentation/seminar materials.	OT

*OT: On Time, SFT: Scheduled for later, DL: Delay

1-4 Achievement of the Project Purpose

Project Purpose / Indicators	Achievement (%)	Remarks	Expected Time of achievement
Project Purpose: A human resource development system is established to introduce efficient shipbuilding procedures and production management methods at shipyards in Indonesia.			
Indicator 1: Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) is approved by MOI and IPERINDO	-	Currently underway. IPERINDO side has briefed MOI and MOI is working to obtain education budget.	by Mar 2024
Indicator 2: Training materials are adopted by MOI and IPERINDO	-	JICA team will submit training material in English version, until Feb 2024 to MOI.	by Feb 2024
Indicator 3: At more than 50% of the shipyards that participated in the training, the draft documents (customized shipbuilding procedure & production management method, facilities / equipment plans and internal human resource development plans) are responded by the management level of each company.		Having learned that productivity improvements are achieved through management, participants explain to management how to make improvements. The follow-up also confirmed the presence of management's high regard for the program. Each shipyard is currently preparing presentation/seminar materials.	-

2 Delay of Work Schedule and/or Problems (if any)

N/A

3 Modification of the Project Implementation Plan

Mr. Oda, the Long-term Expert, will stay in Jakarta until the end of March 2024. (The

length of his stay was shortened from May 2024 to March 2024.)

4 Current Activities of Gov. of Indonesia to Secure Project Sustainability after its Completion

Regarding Human Resource Development plan, related parties are currently discussing.

ANNEX 1 0

Progress of Project Activities
Kemajuan Kegiatan Proyek

Project overview and progress

6th/Oct/2023

JICA Expert (Team Leader/Shipyard Management)

MES TOKKI & Engineering Co., Ltd.

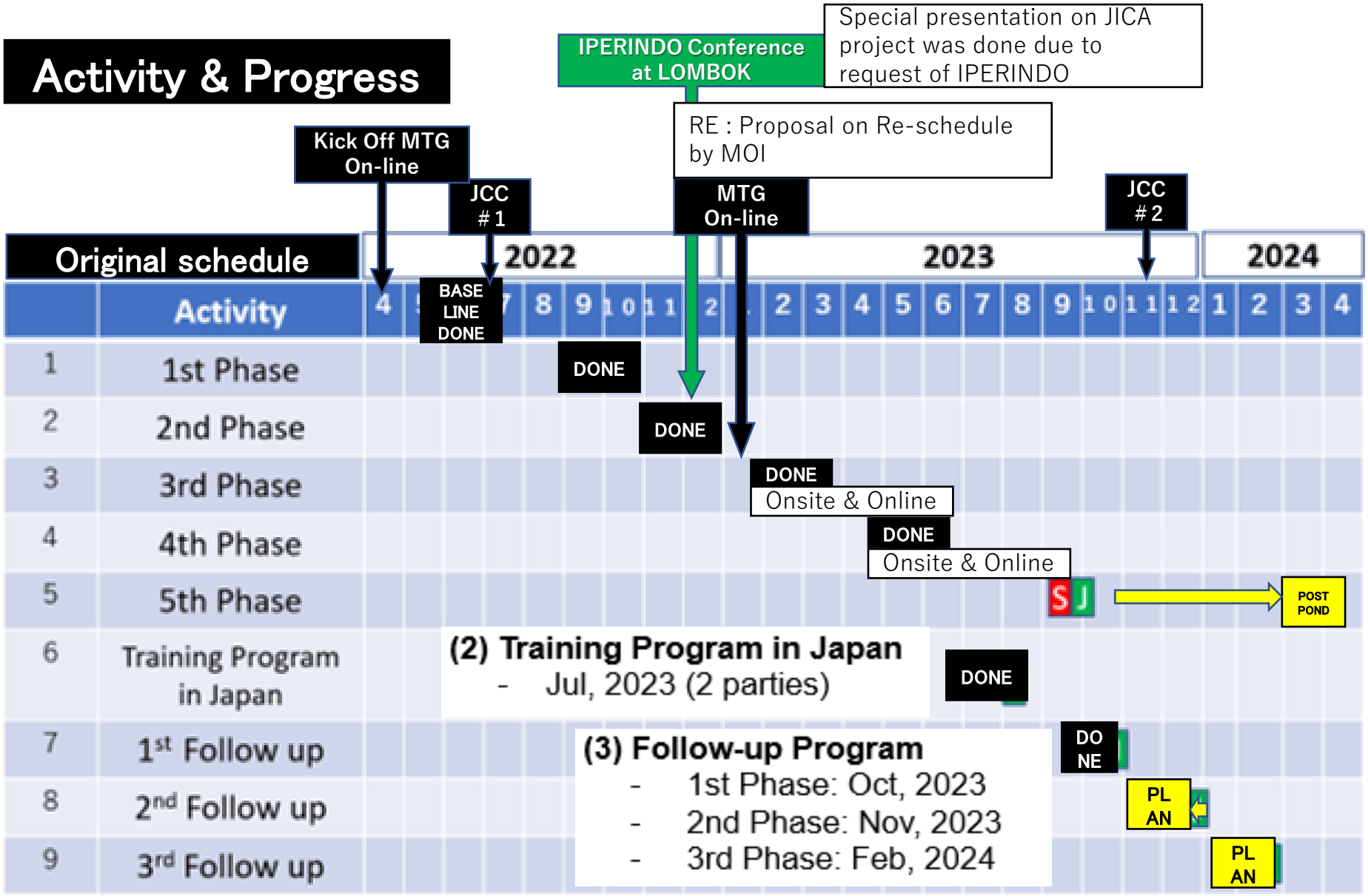
H.Doi

Agenda

1. Overview of Project
2. Participating Shipbuilding Companies & Participants
3. Schedule of activities (completed and future)
4. Training Review
5. Training partner
6. Evaluation by Participant
7. Evaluation by JICA short term expert team
8. IT utilization of educational infrastructure (creation of web site)
9. Outcomes and issues identified in follow-up
10. Others

1. Overview of Project

Activity & Progress



Project Framework

【Overall Goal】
Shipbuilding procedures and production management methods are improved at shipyards in Indonesia.

【Indicator 1】 Status of implementation of human resource development plan by MOI and IPERINDO (**At least one (1)** training program is conducted by MOI and IPERINDO).

【Indicator 2】
More than **25%** of shipyards that participated in the training build ships in accordance with the customized shipbuilding procedures and production management methods developed through training

【Project Purpose】 A human resource development system is established to introduce efficient shipbuilding procedures and production management methods at shipyards in Indonesia.

【Indicator】
① Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) is approved by MOI and IPERINDO
② Training materials are adopted by MOI and IPERINDO
③ At more than **50**% of the shipyards that participated in the training, the draft documents (customized shipbuilding procedure & production management method, facilities / equipment plans and internal human resource development plans) are responded by the management level of each company.

【Output 1】 A system for human resource development to introduce efficient shipbuilding procedures and production management methods is prepared

【Output 2】
Training participants' competence in shipbuilding procedures and production management is improved.

【Output 3】
Understanding of how to introduce efficient shipbuilding procedures and production management methods customized for each shipyard is deepened.

【Indicator 1】
1-1 Training materials on shipbuilding procedures and production management (including instructor's manuals) are developed
1-2 Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) is developed

【Indicator 2】
2-1 More than **75%** of training participants **complete the whole training**.

【Indicator 3】
3-1 More than **50%** of the shipyards that participated in the training develop the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans.
3-2 More than **50%** of shipbuilding engineers at each shipyard attend the presentation/seminar of the draft customized shipbuilding procedure & production management method, the draft facilities / equipment plans and internal human resource development plans

Project Framework

Current status.

【Overall Goal】
Shipbuilding procedures and production management methods are improved at shipyards in Indonesia.

【Indicator 1】 Status of implementation of human resource development plan

The theory was confirmed in practice through the completion of the 1-4 phases training and the training in Japan. The results of the training so far have been shared and the basis for the development of an education plan will be established. The plan will be introduced later. 【MOI & IPERINDO mission】

【Indicator 2】

① Confirmed by Follow UP visit.

【Project Purpose】 A human resource development system is established to introduce efficient shipbuilding procedures and production management methods at shipyards in Indonesia.

【Indicator】
① Human resource development plan (2024-2026) (including implementation structure, training plan, budget measures, etc.) is approved by MOI and

① Human resource development plan shall be prepared by Training partner teams, then MOI & IPERINDO shall evaluate and approve.
② The PPTs utilized in the training and the original textbooks will be developed to be more practical in future FUPs and approved by the MOI and IPERINDO
③ Confirmed by Follow UP visit.

【Output 1】 A system for human resource development to introduce efficient shipbuilding procedures and production management methods is prepared

① Human resource development plan shall be prepared by Training partner teams, then MOI & IPERINDO shall evaluate and approve.
② The PPTs utilized in the training and the original textbooks will be developed to be more practical in future FUPs and approved by the MOI and IPERINDO

【Output 2】
Training participants' competence in shipbuilding procedures and production management is improved.

【Indicator 2】
2-1 More than **75%** of training participants **complete the whole training.**

Well attended (Almost 100%)

【Output 3】
Understanding of how to introduce efficient shipbuilding procedures and production management methods customized for each shipyard is deepened.

【Indicator 3】

① Confirmed by Follow UP visit.

2. Participating Shipbuilding Companies & Participants

STATUS OF TRAINING PARTICIPANT				
No	Shipyard Name	Location	Participant	
			Name	
1	PT. Dock & Perkapalan Kodja Bahari	Jakarta	NURKHOLIS	JAKARTA
			SOMA ADI WARDHANA	
2	PT. Dock Bahari Nusantara	Cirebon	JAFAR SUPARDI	
3	PT. Pahala Harapan Lestari	Bangka	BENNY LIE	
			BAMBANG SETIAWAN	
4	PT. Industri Kapal Indonesia	Makasar	SYARIFUDDIN SYAHRIR	
			SADAM JAHIDIN	
5	PT. Dukuh Raya Shipyard	Lombok	AGUS SALIM RABANG	
			ALIEF FEBRIANDY RAMADHAN	
6	PT. Samudra Marine Indonesia	Cilegon	NARENDRA FACHRUL FANI	
			ALFIN THARIQ	
7	PT. Molding Jaya Marine	Kutai-Samarinda	Virgus Wira Yudha	
			Rommy	
8	PT. Louis Alain	Batam	Denny Oscar	
9	PT. Galangan Balik Papan Utama	Balikpapan	NOVAN THEODORUS	
			OKTAVIANUS SETIAWAN THEODORUS	
11	PT. Patria Maritim Perkasa	Banjarmasin	Muhammad Umar Sun	SURABAYA
			Cahyono Fajri Wibowo	
12	PT. Muara Kembang	Kutai Kartanegara	DENI RAHMAN	
13	PT. Dock & Perkapalan Air Kantong	Bangka	Berlian Tofan Rizkiana	
			Ilham Qadhafi	
14	PT. Dumas Tanjung Perak Shipyard	Surabaya	NYOMAN PALADIPA INGGAS	
			BAGOES ROEDIYANTO POETRA	
15	PT. Dok Perkapalan Surabaya	Surabaya	IQBAL NUR HIDAYAT	
			ARDIKA WENDY CAHYA SAPUTRA	
16	PT. Adhiluhung Sarana Segara Indonesia	Madura	JIMMY RISKI SOFYAN	
			DHIMAS NURDIANTO	
17	PT. Orela Shipyard	Gresik-Surabaya	GURIT WIGUNG PRASTYAWAN	
			ARIS KUSTIAWAN	
18	PT. Yasa Wahana Tirta Samudera	Semarang	JUPRIYADI	
			HERDHITA AGUS RETNANTO	
19	PT. Janata Marina Indah	Semarang	IDRIS HIBATULLAH ABRAR KHARISMARSONO	
			NOVIAN HANU PRADANA	
20	PT. Waruna Shipyard Indonesia	Medan	James Ridwan Purba	
			Calvin Setiawan	

3. Schedule of activities (completed and future)

	Activity	Date	Status	Note
1	**KICK OFF MEETING**	2022/4/14	Done	By ZOOM
2	**Baseline survey**	2022/5/17 -7/14	Done	Reported at JCC1
3	**JCC#1**	2022/7/7	Done	At JKT
4	**PHASE 1 SBY JKT**	2022/9/19-30 10/3-14	Done	On site
5	**PHASE 2 SBY JKT**	2022/11/7-18 11/21-12/2	Done	Incl. Visit shipyard
6	**PHASE 3 SBY JKT**	2023/2/27-3/10 3/13-3/27	Done	On-site &On line
7	**PHASE 4 SBY JKT**	2023/5/22-6/6 6/12-6/23	Done	On-site &On line
8	**JAPAN TRAINING #1 #2**	2023/7/2-7/16 7/23-8/6	Done	

(Continue)

	Activity	Date	Status	Note
9	**FOLLOW UP VISIT#1**	2023/9/15- ↓ 2023/10/12	GOING	On site
10	**JCC#2**		Doing	At JKT
11	**FOLLOW UP VISIT#2**	2023/11/7 ↓ 2023/12/1	PLANNED	On site
12	**FOLLOW UP VISIT#3**	2024/1/17 ↓ 2024/2/16	PLANNED	On site
13	**PHASE 5 SBY JKT**	2024/3/11-26 3/29-4/6	PLANNED PLANNED	On site
14	**JCC#3**			

MOI's rescheduling will coincide with the Ramadan period in 2024, so schedule adjustments are needed.

Training Outline of Phase 1

Category : Management	☐ The TOC Thinking Process (logical thinking) was studied as an **educational framework.** This was intended to develop thinking skills and **avoid bias**. ☐ Participants learned the basics of system improvement. Participants understood the characteristics of systems, the relationship between productivity/profitability and systems, learned the **importance of flow,** and studied system improvement methodologies. Participants' understanding of the system improvement methodology was quickly deepened through hands-on learning by experience-based simulation games.
Category : Japanese Shipbuilding Engineering	The following construction engineering performed in a Japanese mid-size shipyard was introduced. ☐ The construction methods (fabrication, small assembly, assembly, total assembly, block outfitting, painting, and loading) ☐ and the construction input plan, line table preparation and process planning methods were introduced.

Training schedule　Phase 1 (1/2)

(Training timetables in Surabaya and Jakarta are the same.)

1st WEEK		MON	TUE	WED	THU	FRI
1	9:00–10:20	OPENING CEREMONY	Definition of Improvement of system productivity (M103)	Consider suitable KPIs for system improvement. (M109)	Explains how flow management is implemented (M110–113)	Management system (M117,118)
2	10:40–12:00		DICE game to understand the system feature (M104,105)	Explains how flow management is implemented (M110–113)	Learning the freezing process Multitasking game (M114)	
3	13:00–14:20	Education frame work THINKING PROCESS (M101–102)	Learn the relationship between cash flow and management (M106,107)		Explaining System priority management (M115)	
4	14:40–16:00		Four main factors that impede flow (M108)		Ambitious target (M116)	

INTERACTIVE SIMULATION GAME TRAINING

Training PPT NO.

Shipbuilding Text book "Improvement of construction procedures and production management"
Vol.1　Education framework management systems

- ☐ Appendix 1　Overall optimal introduction method
- ☐ Appendix 2　Experiential simulation learning Dice Games
- ☐ Appendix 3　Throughput accounting
- ☐ Appendix 4　Indonesia Improvement Standard　・・・Added at 3rd phase
- ☐ Appendix 5　Improvement Proposal Preparation Procedure　・・・Added at 3rd phase

Training schedule　Phase 1 (2/2)

(Training timetables in Surabaya and Jakarta are the same.)

2nd WEEK		MON	TUE	WED	THU	FRI
1	9:00-10:20	Ship building line chart (120-121)	Basis for planning the overall schedule and master schedule (125-126)	Fabrication Process (129-130)	Grand assembly and assembly process (133-134)	Painting (137-138)
2	10:40-12:00					
3	13:00-14:20	Process and Workload (122-123)	The basis of a logistics system (127-128)	Sub-assembly Process (131-132)	Block outfitting (135-136)	Building dock process (139-140)
4	14:40-16:00					

Project for the Indonesian Shipbuilding Industry Modernization

Kuesioner setelah selesai tahap pertama

Nama galangan kapal	Attached 1-1
Name	
Tanggal.	26-Sep

Terima kasih atas kerja keras Anda semua dalam pelatihan tahap pertama. Silakan isi kuesioner untuk membantu kami meningkatkan pelatihan di masa mendatang. Pertanyaan-pertanyaan akan ditanyakan secara terpisah untuk Minggu 1 Sistem Manajemen dan Minggu 2 Pendidikan Pengetahuan Teknik Perkapalan Jepang.

【A】 Sistem Manajemen (termasuk Proses Berpikir)

	Saya rasa tidak.	Tidak juga, saya rasa tidak	Saya tidak tahu.	Saya pikir begitu.	Sangat banyak.
	1	2	3	4	5
【Q１】 Menurut anda, apakah pelajaran mengenai Proses Berpikir cukup banyak membantu anda ? 思考プロセスは役に立ちどうですか？	0	0	1	5	14
【Q２】 Apakah Anda mempelajari sesuatu dalam permainan dadu yang tidak Anda sadari sebelumnya? ダイスゲームでこれまでに気づかないことを学べましたか？	0	0	1	8	11
【Q３】 Apakah Anda merasa senang untuk fokus pada satu hal pada satu waktu dalam permainan multitasking? マルチタスクゲームで１つずつ集中することが良いことと思いましたか？	0	0	0	5	15
【Q４】 Manajemen aliran dapat sangat ditingkatkan dengan hanya berfokus pada input sambil mempertahankan cara kerja saat ini. Apakah Anda ingin mencapai hal ini di galangan kapal Anda? (Ini adalah permainan kedua dari multitasking. Pekerjaan tidak terlalu sibuk, kualitas meningkat, dan produksi bisa berlipat ganda). フローマネージメントは仕事の進め方は今のままで、投入を絞るだけで大きな改善ができます。あなたの造船所でも実現したいですか？	0	0	1	4	15
【Q５】 Apakah Anda memahami apa yang Anda pelajari tentang cara menerapkan sistem? システムへの導入方法を学びましたが、理解できましたか？	0	0	1	16	3
【Q６】 Apakah Anda ingin memperkenalkan sistem ini, tetapi merasa bahwa Anda memerlukan bantuan instruktur? 導入したいが、インストラクターの支援が必要だと思いますか？	0	0	0	18	2
【Q７】 Apakah Anda ingin belajar bagaimana menerapkan sistem ini di galangan kapal Anda jika ada instruktur yang bisa membantu anda? インストラクターが支援することが出来ればあなたの造船所で導入学習をしたいですか？	0	0	0	8	12
【Q８】 Apakah Anda memahami KATA KUNCI "Freeze/FOCUS" dalam sistem manajemen? Apakah Anda memahaminya? 凍結やFOCUSを従来していましたか？	0	0	1	8	11
【Q９】 Apakah Anda memiliki pengalaman sebelumnya dengan Freezing dan FOCUS? 凍結やFOCUSを従来していましたか？	0	2	4	9	5
【Q１０】 Menurut Anda, apakah harus ada kesempatan bagi instruktur sistem manajemen untuk mengunjungi galangan kapal Anda pada tahap kedua untuk memberikan bimbingan dan pendidikan tentang implementasi manajemen 第２期に造船所にマネージメントシステムインストラクターがあなたの造船所に行って、フローマネージメント導入指導教育を実施する機会があると良いと思いますか？	0	0	0	11	9
【Q１１】 Menurut Anda, apakah materi-materi yang kami sajikan cukup mudah untuk dimengerti 私たちが提示する資料は、十分に理解しやすいと思いますか？	0	2	0	17	1

Training Outline of Phase 2

Category : Management	☐ After reviewing the management training conducted in the first phase, a demonstration of the first actions to be taken when implementing flow-oriented management was conducted by visiting 4 actual shipyards (2 in Surabaya and the other 2 in Jakarta). After the virtual learning experience, a review was conducted to learn about the learning and implementation concerns. ☐ In the second week, only the management training team visited shipyards that were considered to be particularly interested in introducing management training based on the management training questionnaire in the first phase, and attempted to demonstrate the introduction of flow-oriented management.
Category : Japanese Shipbuilding Engineering	The presentation covered the overall design process (basic design, functional design, detailed design, and production design drawings), the basics of IT-based production information systems, design progress management and improvement, and other aspects of shipyard design work.

Training schedule　　Phase 2 (1/2)

(Training timetables in Surabaya and Jakarta are the same.)

1st WEEK		MON	TUE	WED	THU	FRI
1	9:00–10:20	OPENING CEREMONY	VISIT PT.DUMAS • Review flow management • Demonstrate how to freeze.	Review & Discussion of Visiting Shipyard	VISIT PT Adiluhung • Review flow management • Demonstrate how to freeze.	Review & Discussion of Visiting Shipyard
2	10:40–12:00					
3	13:00–14:20	**Review Flow Management**				
4	14:40–16:00					

【Note】

The management team found that the results of the first phase of **the flow management** training survey showed **sufficient interest and expectations for flow management** implementation, so they visited several shipyards (PT. Dukuh Raya Shipyard & PT. Indonesia) during 2nd week, to investigate their concerns about flow management implementation and the preparations needed to implement it.

INTERACTIVE ~~(SIMULATION GAME)~~ TRAINING

Training schedule Phase 2 (2/2)

(Training timetables in Surabaya and Jakarta are the same.)

2nd WEEK		MON	TUE	WED	THU	FRI
1	9:00–10:20	Design Flow (1) Overview and Basic Design / Functional Design #221–222	Building a design process and dealing with design delays #225	Design considerations that are easy to make (1) & (2) – Basic Design/Functional Design & Detail Design/Production Design #229	Introduction of Production Design Examples Affecting Productivity #233 – 234	Manufacturing Accuracy Summary Starting from Design #237 – 238
2	10:40–12:00				Fender bed structure #229 Appendix	Vibration # 229 Appendix
3	13:00–14:20	Design Flow (2) Hull Detail dan Production design # 223–224	Curve Shape Design and Production Technology #227–228	BPS # 231	Introduction of Production Design Examples Affecting Productivity #235 – 236	CLOSING
4	14:40–16:00	Shipbuilding CIM #226		CCPM # 230		

Training Outline of Phase 3

Category : Management	☐ The participants reflected on productivity and learned through a hands-on simulation the 2S3 constant, which balances safety and productivity improvement. ☐ Since improving the overall system is a big challenge, negative resistance from management is expected. As a countermeasure, one of the IPERINDO board members suggested standardizing the improvements. An improvement standard was hastily created and training was conducted. A major improvement is contingent on the existence of a sense of crisis. The participants learned to materialize the crisis awareness by utilizing the Thinking Process. ☐ Participants learned a framework (AMBITIOUS TARGET) for creating a process chart to realize large goals that are unlikely to be realized, and trained in presentation.
Category : Japanese Shipbuilding Engineering	The following outfitting engineering performed in a Japanese mid-size shipyard was introduced. ☐ Hull outfitting ☐ Machinery outfitting ☐ Electrical outfitting

Training schedule Phase 3 (1/2)

(Training timetables in Surabaya and Jakarta are almost same.)

1st WEEK		MON	TUE	WED	THU	FRI
1	9:00–10:20	**OPENING CEREMONY** /THINKING PROCESS M01	**IMPROVEMENT** Learning what is sense of crisis.M050607	Presentation & review Gr1 M050607/M0809	OUTFIT OUTLINE ①, 311	OUTFIT HULL ⑤, 323, page 24–33
2	10:40–12:00	REVIEW ON PRODUCTIVITY M02	**IMPROVEMENT** Making ambitious target (Big vision & middle goals)& presentation M050607	Presentation & review Gr2 M050607/M0809	OUTFIT OUTLINE ②, 312–313	OUTFIT HULL ⑥, 324 page 1–25
3	13:00–14:20	2S3TEI INTERRACTIVE SIMM. M03	**IMPROVEMENT** Making ambitious target (Big vision & middle goals)& presentation M050607	Presentation & review Gr3 M050607/M0809	OUTFIT HULL ③, 321–323 page 1–11	Move to home
4	14:40–16:00	REVIEW 2S3TEI M04	Making Ambitious Target until the resolving problem of sense of crisis. M050607	Improve sequence & how to improve M1011,1213	OUTFIT HULL ④, 321–323 page 12–23	

INTERACTIVE SIMULATION GAME TRAINING

TRAINING ON DEVELOPING IMPROVEMENT SCHEME

IMPROVEMENT STANDARD(Proposed by Participant)

GROUP WORK & PRESENTATION

Training schedule　Phase 3 (2/2 On-line)

(Training timetables in Surabaya and Jakarta are almost same.)

2nd WEEK		MON	TUE	WED	THU	FRI
1	9:00–10:20	OUTFIT HULL ⑦, 325 page 26–38	OUTFIT MACH ③ :334 Auxiliary	OUTFIT ELECT ① : 341	OUTFIT ELECT . ⑤ : 344, page 1–32	CONFLICT →TOTAL OPTIMIZATION① M1415
2	10:40–12:00	OUTFIT HULL ⑧, 326–327 page 1—32	OUTFIT MAC ④ : 335 – Steel Outfitting	OUTFIT ELECT ② : 342	OUTFIT ELECT ⑥ : 345 1/2, 2/2 page 1–59	CONFLICT →TOTAL OPTIMIZATION② M1415
3	13:00–14:20	OUTFIT MACH ①, 331 Shafting	OUTFIT MACH ⑤ : 336 Piping	OUTFIT ELECT ③ : 343 (– 26)	①PRESETATION ON REVISED AMBITIOUS TARGET by 3Groups M050607/M0809	None
4	14:40–16:00	OUTFIT MACH ② : 331&332	OUTFIT MACH ⑥ : JSQS	OUTFIT ELECT .④ : 343 2/2, page 27–57	②PRESETATION ON REVISED AMBITIOUS TARGET by 3Groups M050607/M0809	

INTERACTIVE SIMULATION GAME TRAINING

TRAINING ON DEVELOPING IMPROVEMENT SCHEME

IMPROVEMENT STANDARD(Proposed by Participant)

GROUP WORK & PRESENTATION

Training Outline of Phase 4

Category : Management	☐ The framework thinking process, like body builder training, can be repeated to build competence. The AMBITIOUS TARGET was trained again to draft a plan for improving their company's system in the future. ☐ They also learned how to prepare a proposal presentation to management, how to design the lead time required for a proposal, and how to plan an in-house training program.
Category : Japanese Shipbuilding Engineering	The following engineering performed in a Japanese mid-size shipyard was introduced. ☐ Welding ☐ Painting ☐ Quality control

Training schedule　　Phase 4 (1/2)

(Training timetables in Surabaya and Jakarta are the same.)

1st WEEK		MON	TUE	WED	THU	FRI
1	9:00–10:20	Opening Ceremony Review on Productivity M401	Imp. standard④⑤ Study on work sheet M405	Imp. standard⑧ Identifying the LEAD TIME M408	Painting process P01	Imp. standard⑫⑬ Demonstration of proposal presentation to management M411
2	10:40–12:00	Imp. standard① Future improvement plans M402		Imp. standard⑨ LEAD TIME DESIGN M409	Painting practice P02	
3	13:00–14:20	Imp. standard② Learning objectives and Ambitious target template M403	Imp. standard⑥ Completing the Ambitious target. M406	Improve standard⑩⑪ 1 Week Study Course M410	Paint performance, defect P03	Move to home
4	14:40–16:00	Imp. standard③ Creation of Ambitious targets M404	Imp. standard⑦ Prepare materials for proposals to management M407		PSPC, safety P04	

INTERACTIVE SIMULATION GAME TRAINING

TRAINING ON DEVELOPING IMPROVEMENT SCHEME

IMPROVEMENT STANDARD(Proposed by Participant)

GROUP WORK & PRESENTATION

Training schedule　　Phase 4　(2/2 On-line)

(Training timetables in Surabaya and Jakarta are the same.)

2nd WEEK		MON	TUE	WED	THU	FRI
1	9:00–10:20	History and Welding method1 W01	Welding of various metals and Welding procedure specification W05–06	Quality control at shipyard Q01	NDT, and structural test Q05	Improvement activity 2 P06
2	10:40–12:00	Welding method2 W02		Quality Assurance department Q02	JSQS 1 Q06	
3	13:00–14:20	Welding method3 and properties W03	Welding design and Examples of automatic welding W07–08	Improvement activity 1 Q03	JSQS 2 Q07	None
4	14:40–16:00	Non-destructive inspection and Groove symbol W04		Equipment using paint inspection Q04	Improvement activity 1 P05	

Training schedule　Japan training

a. Schedule　1st group: 1 July – 16 Jul.
2nd group: 22 July – 6 Aug.

b. Visited Companies

Visited Companies	Type of industry, etc.	Date of visit	
		1st group	2nd group
TSUNEISHI SHIPBUILDING	Shipbuilding	4 Jul	25 Jul
IWAKITEC	Block & steel structure fabrication	5 Jul	26 Jul
MISUI E&S	LARGE Diesel Engine Manufacturing, Shipbuilding	6Jul 10 Jul	31 Jul 1 Aug
NAKASHIMA PROPELLER	Propeller Manufacturing	7 Jul	27 Jul
YANMAR	Small & Middle Diesel Engine Manufacturing	11 Jul	28 Jul
NMRI	National Maritime Research Institute	12 Jul	2 Aug
ISB	Domestic Ship Repair	13 Jul	3 Aug

c. Lessons learned and findings for trainees

- It is important to eliminate waste through flow management and shorten lead time with 2(5)S3Tei.
- Knowing that there are ways to increase productivity without incurring costs.
- It is useful for the development of the shipbuilding industry that industry, government, and academia cooperate and come together as a cluster.

Note : The report on the Japanese training to JICA has been posted on the web site.

Training Outline(Target) of Phase 5

Category : Management	☐ Training will be provided to other shipyards on the improvement skills developed through past system improvement training. Training requires flexible response in the field, and we believe that training improves the quality of the training. ☐ Training skills are possessed by training partners and participants who have actually conducted the training. We would like to conduct training where those with training skills can hone their educational skills.
Category : Japanese Shipbuilding Engineering	The following engineering performed in a Japanese mid-size shipyard was introduced. ☐ Safety ☐ Environmental issue

Training schedule　Phase 5 (Proposal)

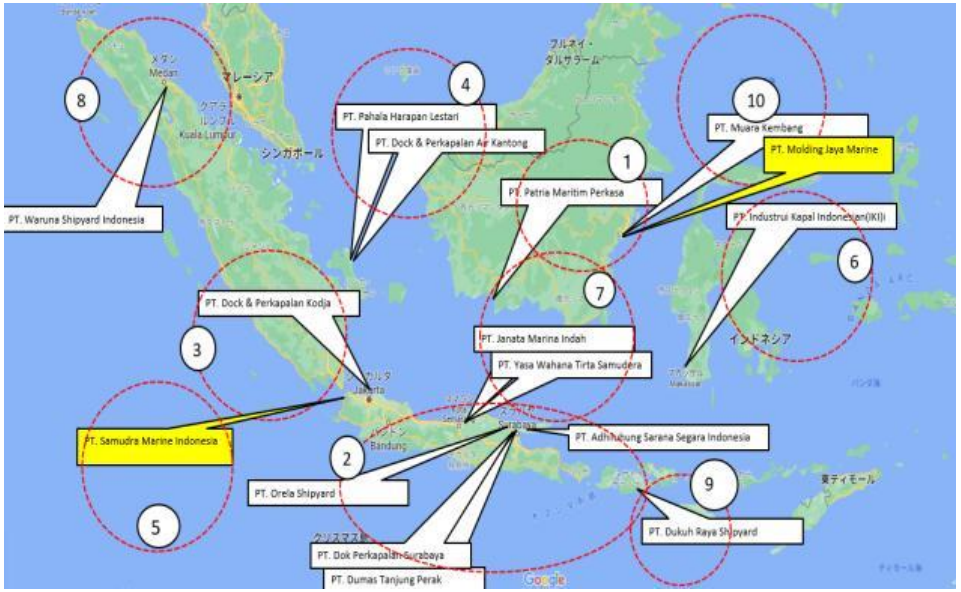
(Training timetables in Surabaya and Jakarta are the same.)

1st WEEK		MON	TUE	WED	THU	FRI
1	9:00-10:20	Opening ceremony /**Review activity**	Training on Safety #3	HR Education activity #1 Demonstration/ Exercise by Training partner & Participant ※Note : Participant to be considered to be one of training partner because they already had learned as well as training partner.		Review Demonstration Improving for next try
2	10:40-12:00	**Review system improvement**	Training on Environmental #1			
3	13:00-14:20	Training on Safety #1	Training on Environmental #2			
4	14:40-16:00	Training on Safety #2	Training on Environmental #3			

2nd WEEK		MON	TUE	WED	THU	FRI
1	9:00-10:20	HR Education activity #2 Demonstration/ Exercise by Training partner & Participant		HR Education activity #3 Demonstration/ Exercise by Training partner & Participant		Review Demonstration
2	10:40-12:00					
3	13:00-14:20					
4	14:40-16:00					

FOLLOW UP VISIT SHIPYARD PLAN

1	PT. Patria Maritim Perkasa
2	PT. Orela Shipyard
	PT. Dok Perkapalan Surabaya
	PT. Dumas Tanjung Perak
	PT. Adhiluhung Sarana Segara Indonesia
3	PT. Dock & Perkapalan Kodja Bahari
4	PT. Pahala Harapan Lestari
	PT. Dock & Perkapalan Air Kantong
5	PT.Samudra Marine Indonesia
6	PT. Industri Kapal Indonesia (IKI)
7	PT. Yasa Wahana Tirta Samudera
	PT. Janata Marina Indah
8	PT. Waruna Shipyard Indonesia
9	PT. Dukuh Raya Shipyard
10	PT. Muara Kembang
	PT. Molding Jaya Marine



2023

	Aug								Sep								Oct								Nov								Dec							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat		Sun	Mon	Tue	Wed	Thu	Fri	Sat		Sun	Mon	Tue	Wed	Thu	Fri	Sat		Sun	Mon	Tue	Wed	Thu	Fri	Sat		Sun	Mon	Tue	Wed	Thu	Fri	Sat	
①			1	2	3	4	5	①						1	2	①	1	2	3	4	5	6	7	①				1	2	3	4	①						1	2	①
②	6	7	8	9	10	11	12	②	3	4	5	6	7	8	9	②	8	9	10	11	12	13	14	②	5	6	7	8	9	10	11	②	3	4	5	6	7	8	9	②
③	13	14	15	16	17	18	19	③	10	11	12	13	14	15	16	③	15	16	17	18	19	20	21	③	12	13	14	15	16	17	18	③	10	11	12	13	14	15	16	③
④	20	21	22	23	24	25	26	④	17	18	19	20	21	22	23	④	22	23	24	25	26	27	28	④	19	20	21	22	23	24	25	④	17	18	19	20	21	22	23	④
⑤	27	28	29	30	31			⑤	24	25	26	27	28	29	30	⑤	29	30	31					⑤	26	27	28	29	30			⑤	24	25	26	27	28	29	30	⑤
																																⑥	31							⑥

2024

	Jan								Feb								Mar								Apr								May							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat		Sun	Mon	Tue	Wed	Thu	Fri	Sat		Sun	Mon	Tue	Wed	Thu	Fri	Sat		Sun	Mon	Tue	Wed	Thu	Fri	Sat		Sun	Mon	Tue	Wed	Thu	Fri	Sat	
①		1	2	3	4	5	6	①					1	2	3	①							1	①		1	2	3	4	5	6	①						1	2	①
②	7	8	9	10	11	12	13	②	4	5	6	7	8	9	10	②	3	4	5	6	7	8	9	②	7	8	9	10	11	12	13	②	4	5	6	7	8	9	10	②
③	14	15	16	17	18	19	20	③	11	12	13	14	15	16	17	③	10	11	12	13	14	15	16	③	14	15	16	17	18	19	20	③	11	12	13	14	15	16	17	③
④	21	22	23	24	25	26	27	④	18	19	20	21	22	23	24	④	17	18	19	20	21	22	23	④	21	22	23	24	25	26	27	④	18	19	20	21	22	23	24	④
⑤	28	29	30	31				⑤	25	26	27	28	29			⑤	24	25	26	27	28	29	30	⑤	28	29	30					⑤	25	26	27	28	29	30	31	⑤
																⑥	31																								

Follow up ＃1
Follow up ＃2
Follow up ＃3
Ramadan

PHASE 5

2/26-3/22

https://fooddiversity.today > article_135985

[2024年のラマダンはいつから？ラマダンに関して日本人が ...]

2023/4/15 - さて、みなさんが気になる2024年のラマダンの期間についてです。 2024年のラマダンの期間は、. 開始：2024年3月10日（日） 終了：2024年4月8日（月）.

4. Training Review

Attendance at each training phase (1-4)

PHASE		Period	NOS of PLANNED Participant		NOS of PLANNED Participating shipyard	Actual attendence	Percentage of attendence	Evaluation on attendence Good : >75%	NOTE
1	SBY	Sep 19-30	37	20	18	20	100%	100%	
	JKT	Oct 3-14		17		17	100%	100%	
2	SBY	Nov.7-18	36	20	18	20	100%	100%	
	JKT	Nov.21-Dec 2		16		15	94%	98%	
3	SBY	Feb.27-Mar.10	35	20	18	20	100%	99%	
	JKT	Mar. 13-28		15		14	93%	98%	
4	SBY	May 22-26	35	19	19	19	100%	98%	PT. Louis Alain was added
	JKT	Jun.12-16		16		16	100%	98%	
5	SBY		Not yet		Not yet	Not yet	Not yet	Not yet	
	JKT								


Kementerian Perindustrian

BADAN PENGEMBANGAN SUMBER DAYA MANUSIA INDUSTRI
PUSAT PENDIDIKAN DAN PELATIHAN SUMBER DAYA MANUSIA INDUSTRI
Jalan Widya Chandra VIII Nomor 34, Senayan, Kebayoran Baru, Jakarta Selatan, DKI Jakarta

Daftar Hadir Peserta
Pelatihan Upskilling Berbasis 3-in-1 Prosedur Pembuatan Kapal dan Manajemen Produksi Fase 1 Angkatan 2
Pusat Industri Digital 4.0, Kota Administrasi Jakarta Barat | 3 - 14 Oktober 2022

Hal. 1 dari 2

#	Tanggal	Tanda Tangan Peserta									
		Agus Salim	Alfin Thang	Alief Fahrurozy Ramadhan	Bambang Setiawan	Feby	Ibrahim	Muhammad Ulum Sya	Narendra Tauhid Fani	Nur Kholis	Oktaviantus Setiawan
1	Senin, 3 Okt										
2	Selasa, 4 Okt										
3	Rabu, 5 Okt										
4	Kamis, 6 Okt										
5	Jumat, 7 Okt										
6	Senin, 10 Okt										
7	Selasa, 11 Okt										
8	Rabu, 12 Okt										
9	Kamis, 13 Okt										
10	Jumat, 14 Okt										

【 Indicator 2】
2-1 More than **75%** of training participants **complete the whole training**.

Results: Good enough

1/2

NOW

FOLLOW UP Activity

Ready to submit system improvements to management

【Unexpected positive outcome】
Participants **autonomously** made system improvement proposals to management and began to obtain **positive responses** from management.

Since new improvements (change) may create resistance from management, standardizing improvements can help move forward against management resistance. (Participant: IPERINDO board member's recommendation)

PHASE 3 & 4

Learn
system improvement standard

JAPAN TRAINING
(Hands-on observation of a good system)

Conflict between heightened motivation and anxiety to improve the system

PHASE 1 & 2

Learn Flow management methodology

2S3TEI Simulation game
PHASE 3

Conduct on-site demonstration training by visiting shipyards
PHASE 1

Understand how to improve system flow and the importance of cash flow and how to improve it

Improved logical comprehension skills(Cause & Effect)

DICE game & Multi task game
PHASE 1

EDUCATION FRAME WORK

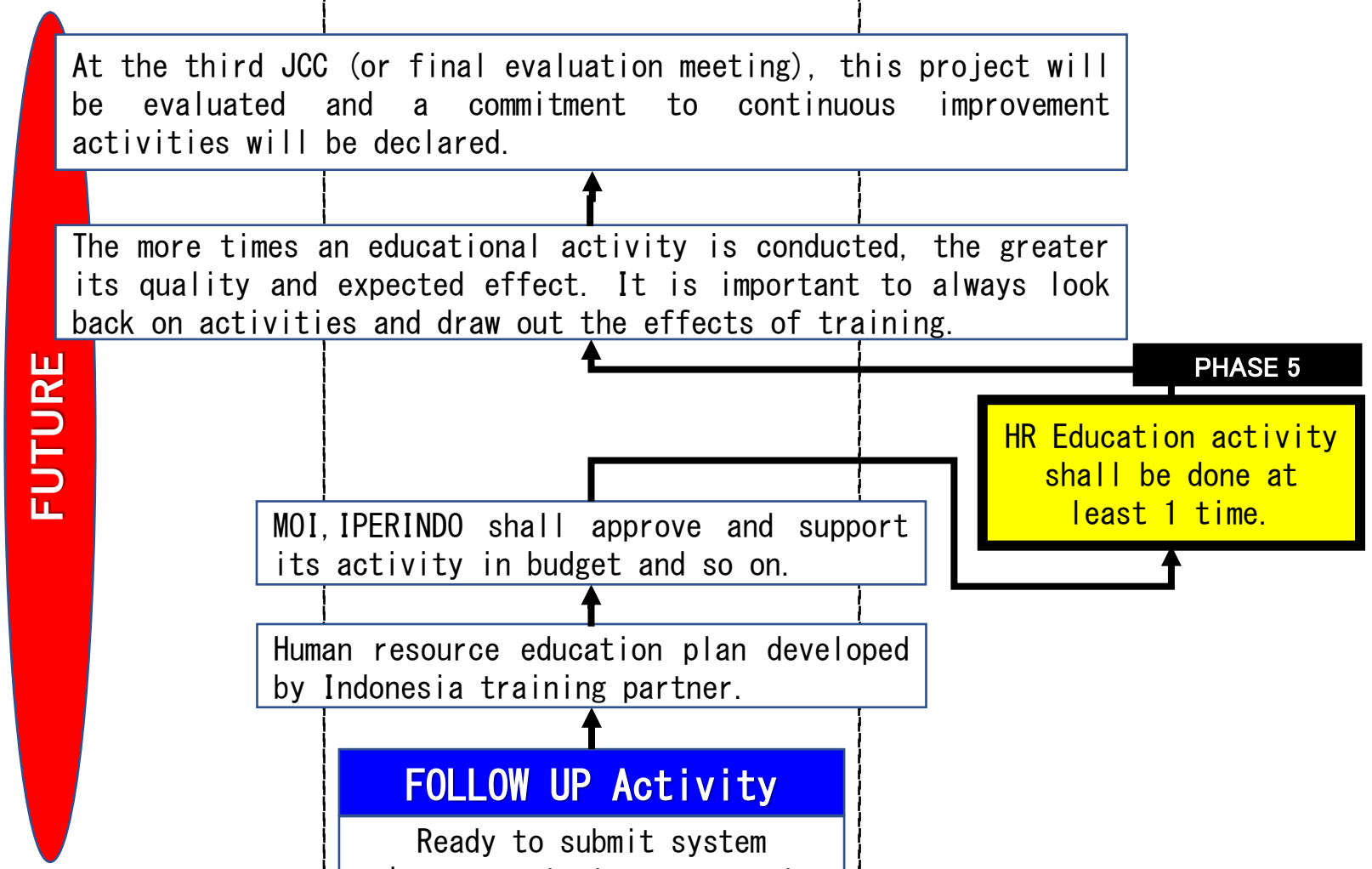
TOC THINKING PROCESS

Ability to think and communicate

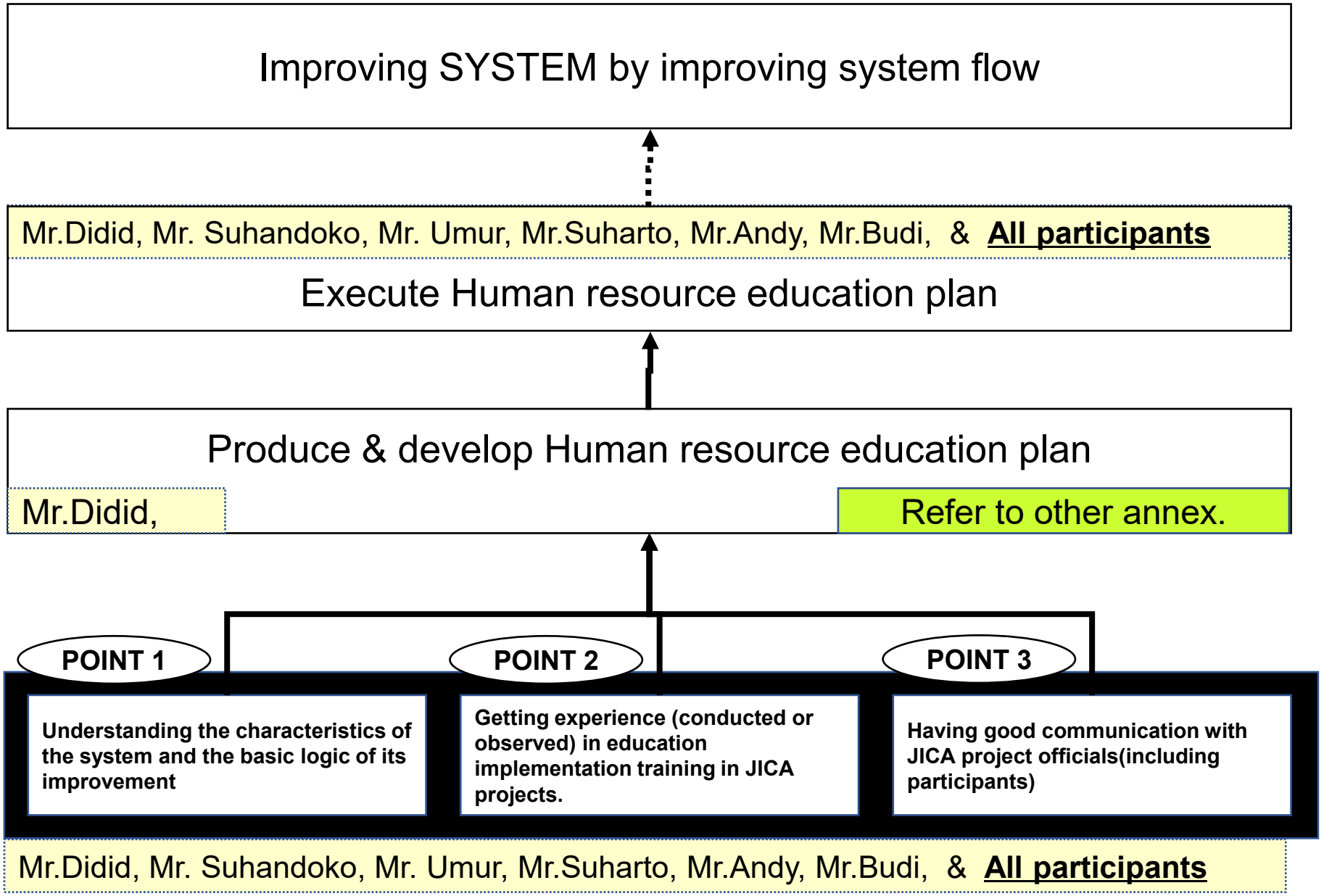
Basic Theory of System Improvement

Hands-on learning

2/2


FUTURE
At the third JCC (or final evaluation meeting), this project will be evaluated and a commitment to continuous improvement activities will be declared.
The more times an educational activity is conducted, the greater its quality and expected effect. It is important to always look back on activities and draw out the effects of training.
PHASE 5
HR Education activity shall be done at least 1 time.
MOI, IPERINDO shall approve and support its activity in budget and so on.
Human resource education plan developed by Indonesia training partner.
FOLLOW UP Activity
Ready to submit system improvements to management
Ability to think and communicate
Basic Theory of System Improvement
Hands-on learning

5. Training partner



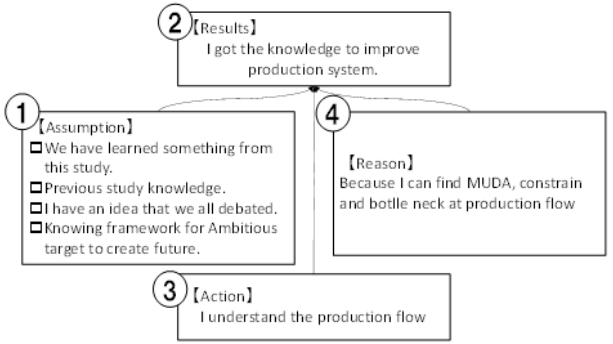
6. Evaluation by Participant

At the time of the JAPAN training, we asked the participants to reflect on their own growth from the previous trainings. Below is a partial list, but many participants acknowledged that they now understand the importance of system flow and methods of improvement

▪別添資料６　個人の学びの成果

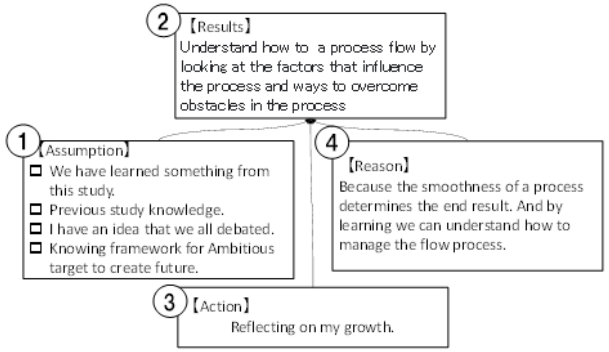
Tofan

Reflect on the results of your personal learning.



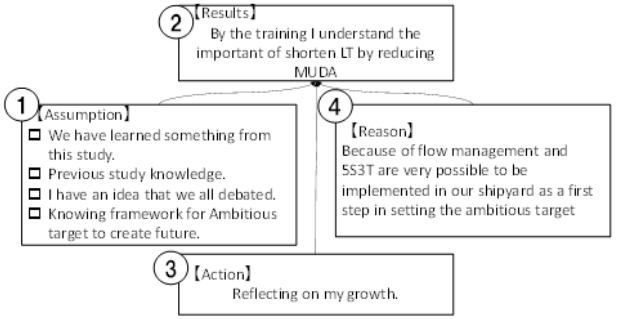
Nyoman

Reflect on the results of your personal learning.



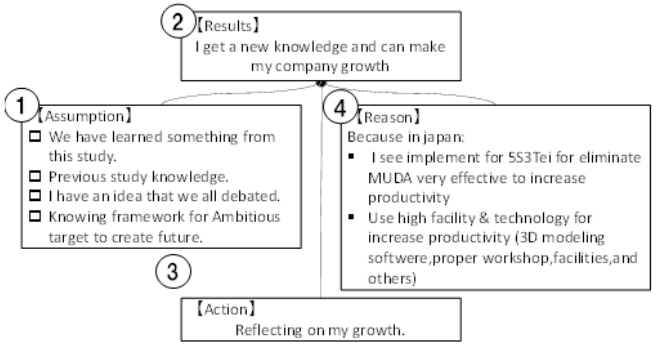
Novian

Reflect on the results of your personal learning.



CHAYONO

Reflect on the results of your personal learning.



7. Evaluation by JICA short term expert team

【Evaluation Point】
Observe action to accept proposal/learning on system improvements, by participants or/and management.

【Evaluation】 GOOD

Management expressed positive intentions and directed the creation of an implementation team.

One participant made suggestions to management to introduce improvements

Most participants express positive attitudes

The Logic of Accepting Change

【Possible future of the partner】
Open to change/suggestion

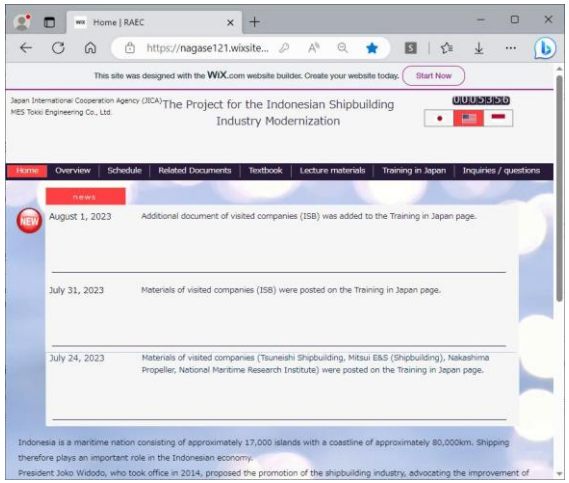
【necessary condition①】
Sufficient Benefit.

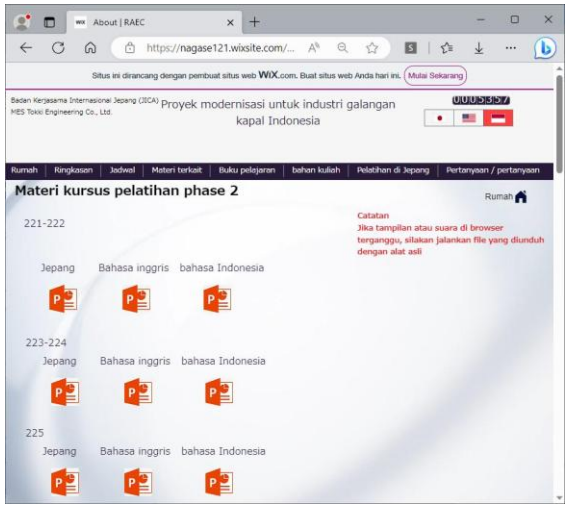
【necessary condition②】
Low Risk

8. IT utilization of educational infrastructure (creation of web site)

A website dedicated to this project has been established to share information among the parties involved in this project. The website provides the same content in three languages: Japanese, English, and Indonesian.
The URL is shown below.

https://nagase121.wixsite.com/website-1





Website Usage

- Disclosure of information such as the outline and schedule of this project
- Release and distribution of lecture materials to participants.
- Prior confirmation and brushing up of lecture materials between JICA short term experts and training partners.
- Providing information to participants.

Advantages of using the website

- Up-to-date information can be shared among all parties concerned.
- Created an environment in which participants could access the lecture materials at any time to prepare for and review the lectures.
- It was possible to brush up on lecture materials right up until the last minute before the lecture.

9. Outcomes and issues identified in follow-up

【25th Sep visit Orela shipyard】

At the Orela shipyard, a successful case was confirmed in which a major process disruption caused by a delay in equipment delivery was remedied through flow management. This achievement was highly evaluated by the directors, who confirmed that the project would be horizontally deployed in other projects.

Success after Flow Improvement study (ORELA Shipyard)

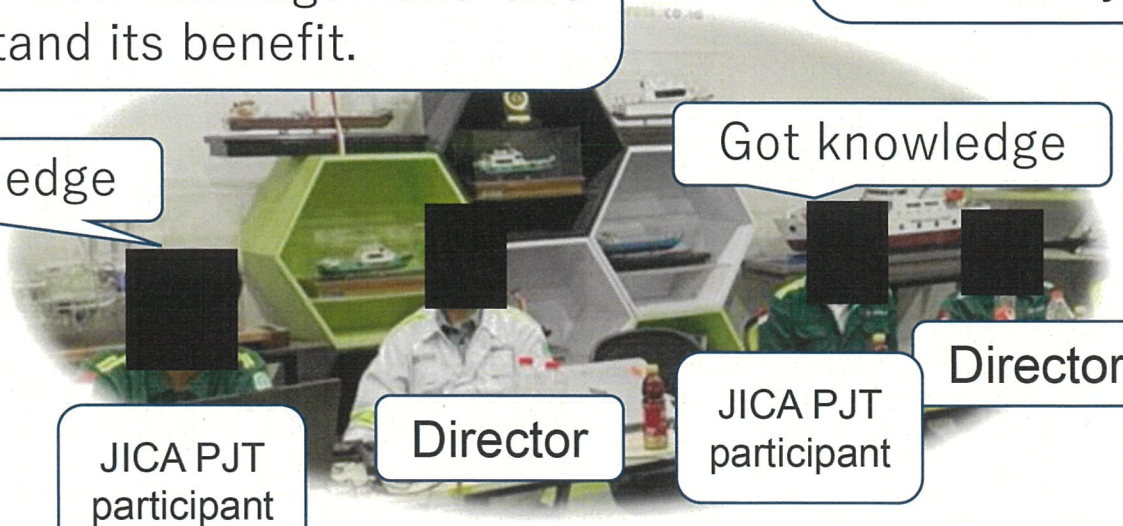
【New future】
Director understood real improvement by Flow management. They will start supporting flow management

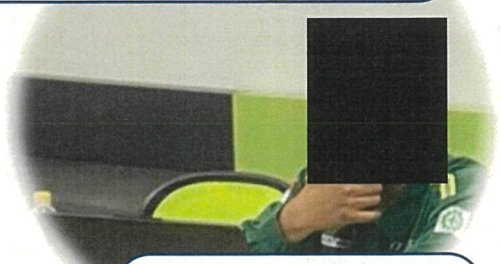
【Challenge】
Tried flow management into project facing serious problem(see next page)

Gratis

【Existence of Study】
Orela (Bapak Aris dan Gurit) studied flow management and understand its benefit.

【Existence of real Crisis】
Facing Serious situation on real project(Delay material brought risk of delay due date)

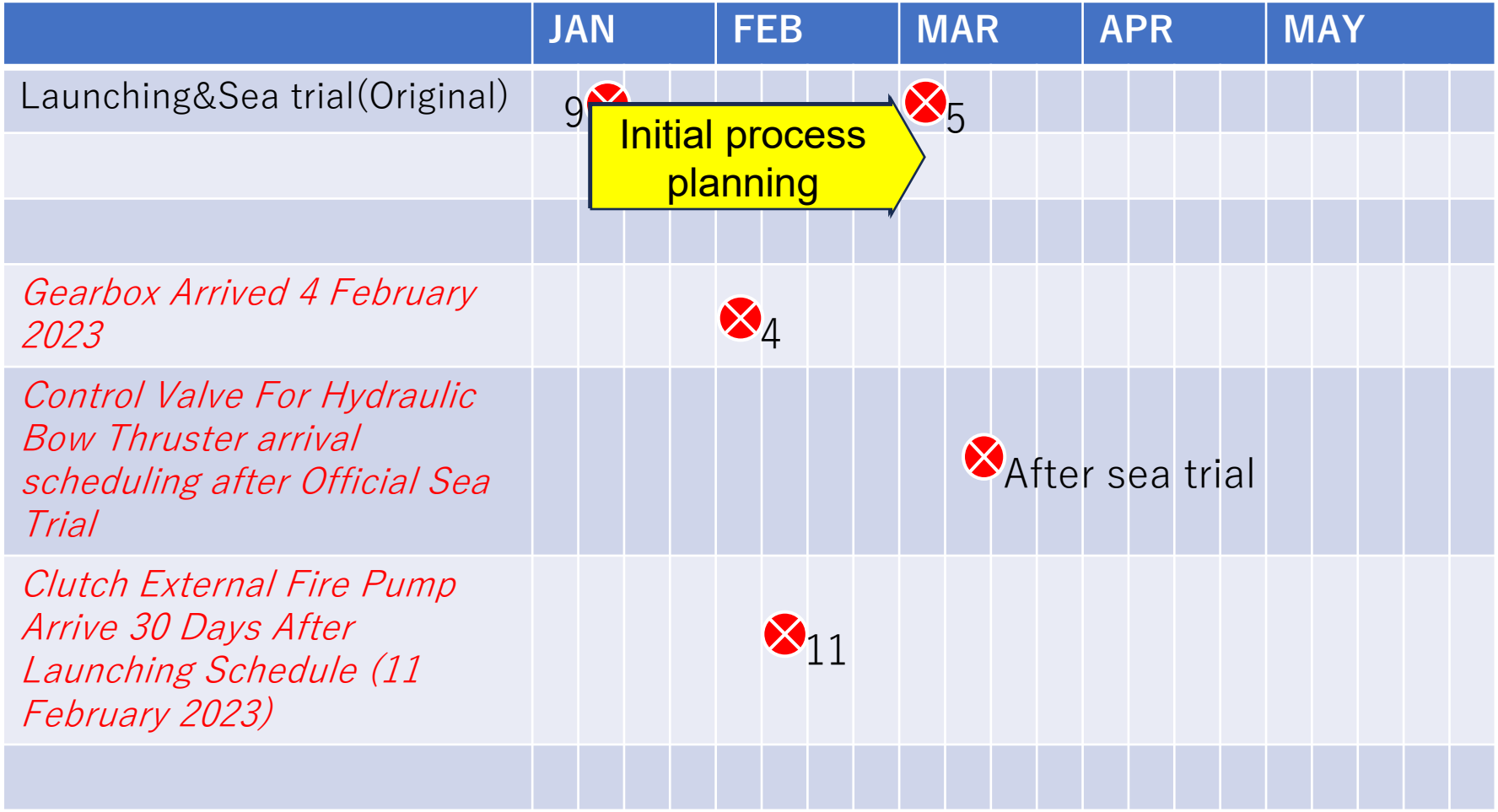




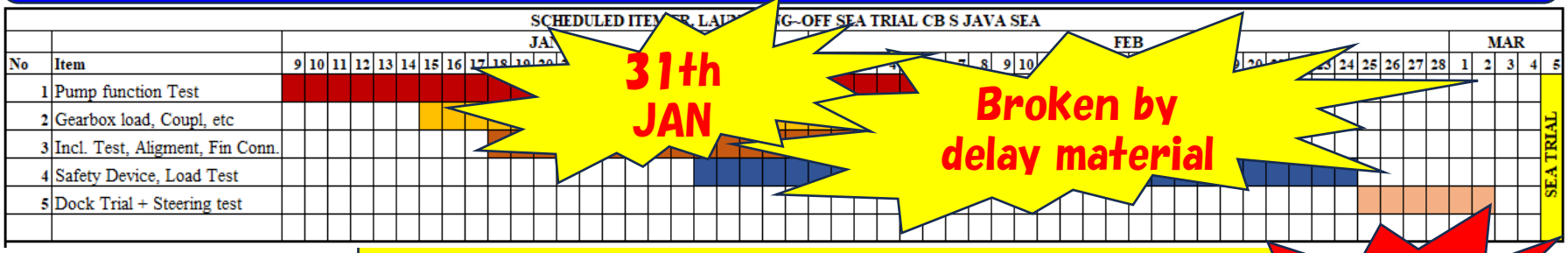
Bapak Aris
Challenged flow management and success

Delays in equipment delivery hit ORELA

Are there any delays in receiving shipments at your shipyard?

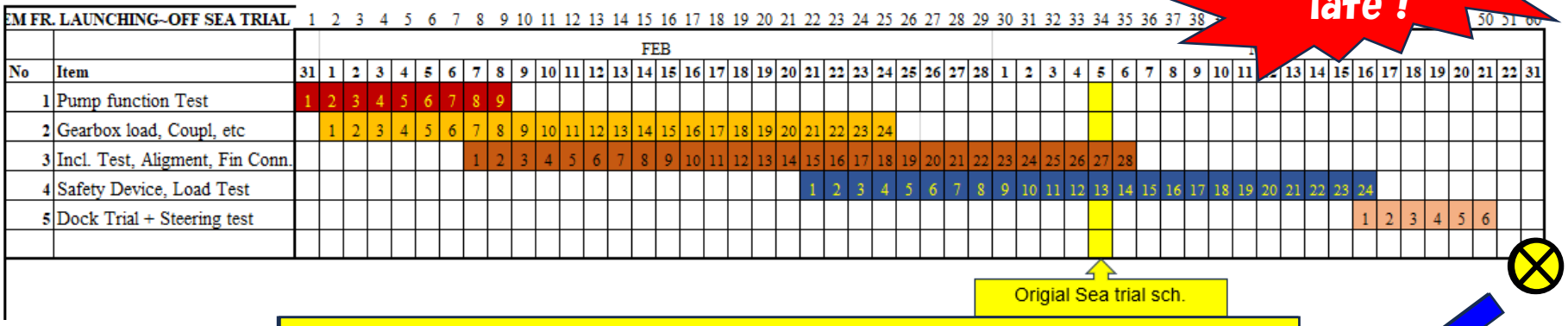


ORIGINAL SCHEDULE

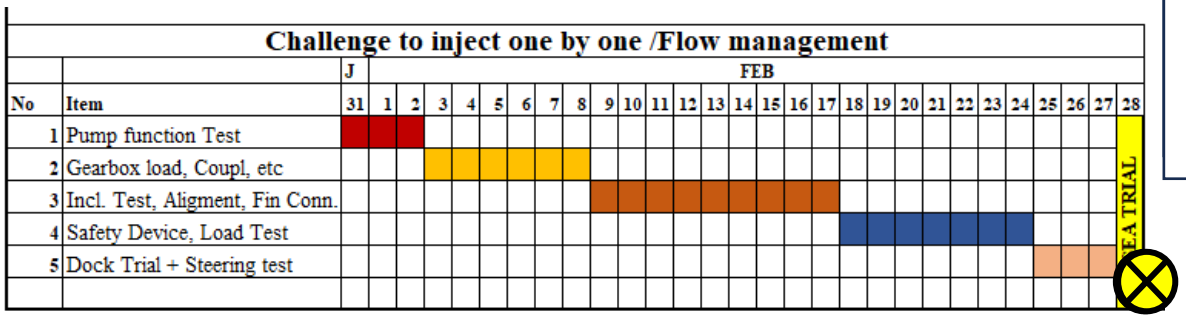


Examine the process in a conventional way

Too late !



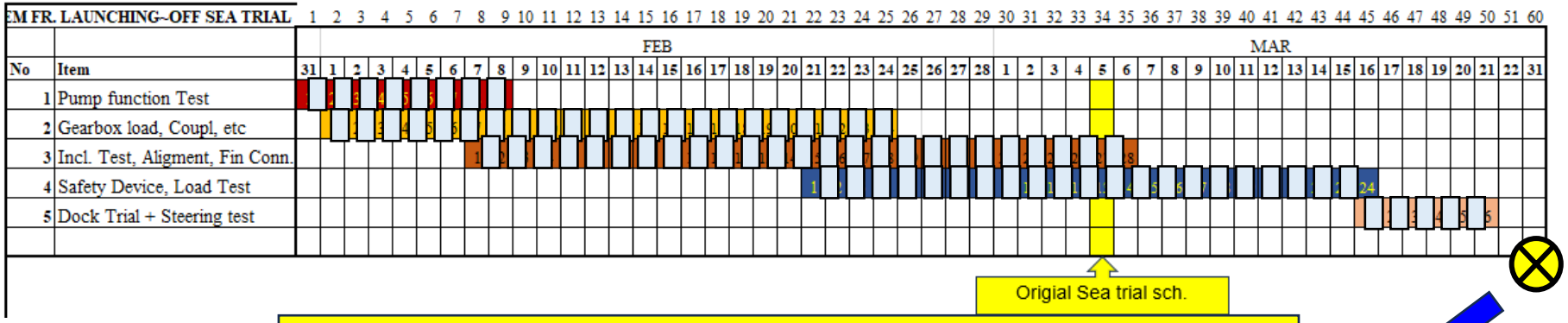
Results?



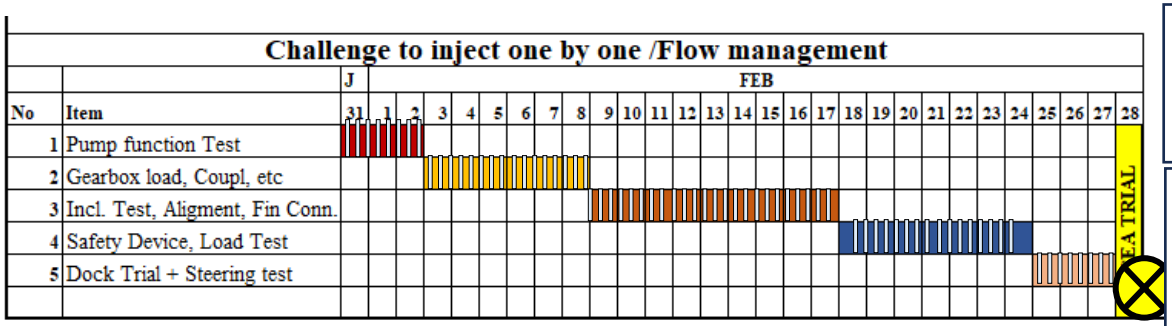
Succeeded shortening LT
(51days => 29days)
Without any investment

Logic to shorten LEAD TIME by one-by-one injection.

MUDA in WORK



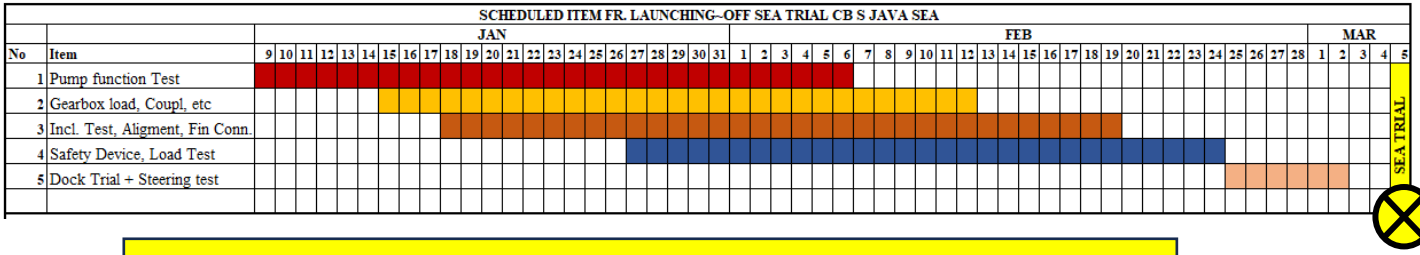
Inject one by one shall eliminate MUDA automatically



Challenge shortening LT
(51days => 29days)

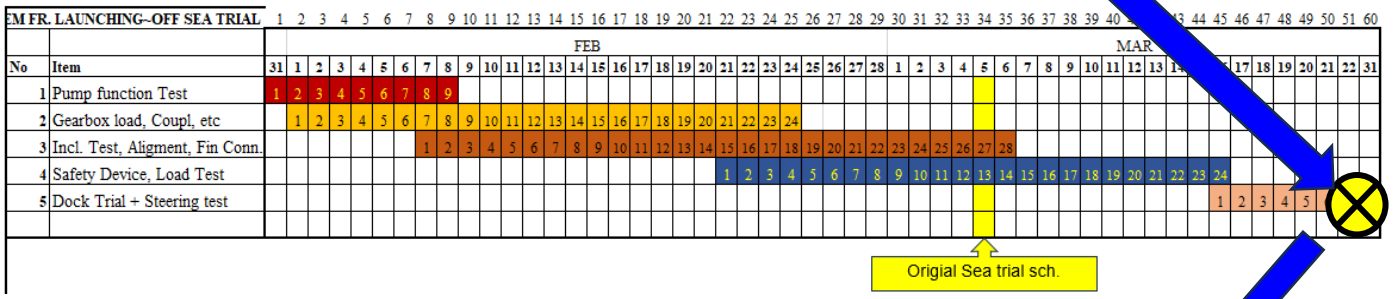
Succeeded shortening LT
(51days => 29days)
Without any investment

ORIGINAL SCHEDULE



Examine the process in a conventional way

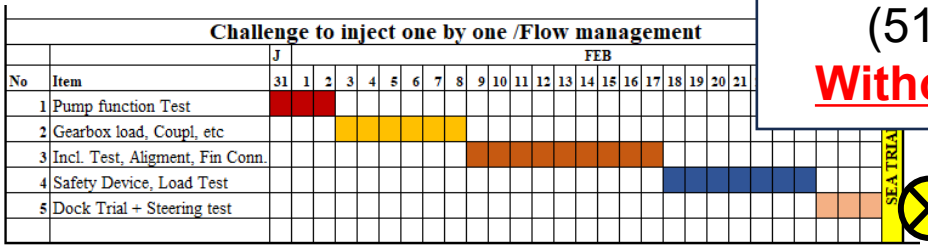
Current Paradigm



Challenge to inject one by one /Flow management

Succeeded shortening LT
(51days => 29days)
Without any investment

NEW Paradigm



Results of New Challenges Part 2

【2nd Result】
Reduce manhour (311 P･Days → 311 P･Days)

【1st Result => Benefit】
Erase risk of delay due date (loss of sales)

【1st Result】
Shorten LEAD TIME (51days => 29days)

Challenge to inject one by one /Flow management

TRIAL FLOW WORK "SATU-SATU"

Projected Manpower JO vs Actual Manpower JO

"CB S Java Sea"

Man Power

- Piping team : 6 Person
- Aligment & machinery : 7 Person
- Electrical : 3 Person
- Project Team : 1 Person

Projected Manpower JO as Schedule (classical methode)

- Machinery items : 29 Days → 29 x 7 = 203 days JO
- Piping : 7 Days → 7 x 6 = 42 days JO
- Electrical : 22 Days → 22 x 3 = 66 days JO

Total = 311 Days JO

Actual Manpower cost (using method satu-satu)

- Machinery items : 16 Days → 16 x 7 = 112 days JO
- Piping : 7 Days → 7 x 6 = 42 days JO
- Electrical : 7 Days → 7 x 3 = 21 days JO

Total = 175 Days JO

Leveraging Success Further

【Next challenge】
Directors promote expansion to other projects

【Next challenge】
The first result create



【1st Result】
Shorten LEAD TIME (51days => 29days)

Challenge to inject one by one /Flow management

NEXT CHALLENGE

Planning in the conventional paradigm

SCHEDULED ITEM FR. HULL CONSTRUCTION LCT S153

No	Item	WEEKS	LT	TOTAL MANPOWER
		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33	Week	2672
1	Hull Construction-S153	52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52 52	33	1716
2	Hull Construction-L150	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	31	451
3	Hull Construction-S154	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27	27	505

【New action】

way to achieve

1. Freeze welding team in project L150 (Crewboat 40m-2) for subcons FAZA
2. Freeze welding team in project L154 (Crewboat 40m-3) for subcons CLC
3. Alocation 8 welder from L150 to S153 (subcons FAZA)
4. Alocation 5 welder from L154 to S153 (subcons CLC)

New LT
6 1 %
4 2 %
3 7 %

Improvement of CF by avoiding the risk of delivery delays and shortening the period of ROI

Planning in NEW paradigm

ACTUAL MEASUREMENT TRIAL WORK "SATU-SATU" LCT S153

No	Item	WEEKS	New LT	TOTAL MANPOWER
		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33		2652
1	Hull Construction-S153	52 52 52 52 52 52 52 52 52 52 52 65 65 65 65 65 65 65 65 65	20	1157
		Inject 13 welder		
2	Hull Construction-L150	1 2 3 4 5 6 7 8 9 10 11 12 13	13	845
3	Hull Construction-S154	1 2 3 4 5 6 7 8 9 10	10	650

Actual results
On time finish

Remarkable LEAD TIME reduction
by maintaining total MANHOUR

What happen?

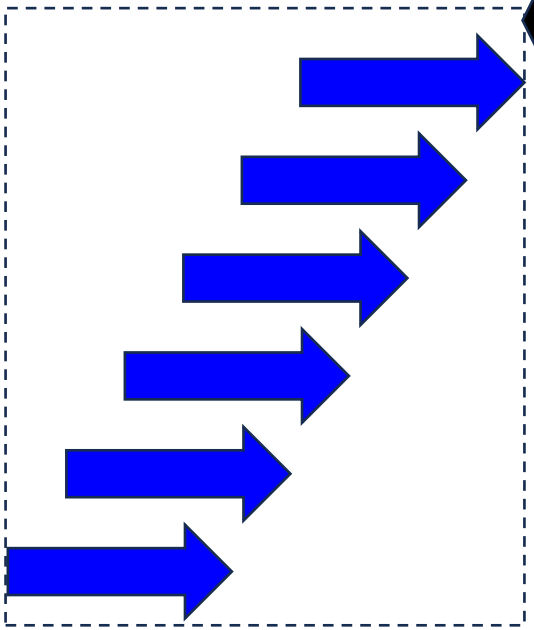
IF YOU stay here,

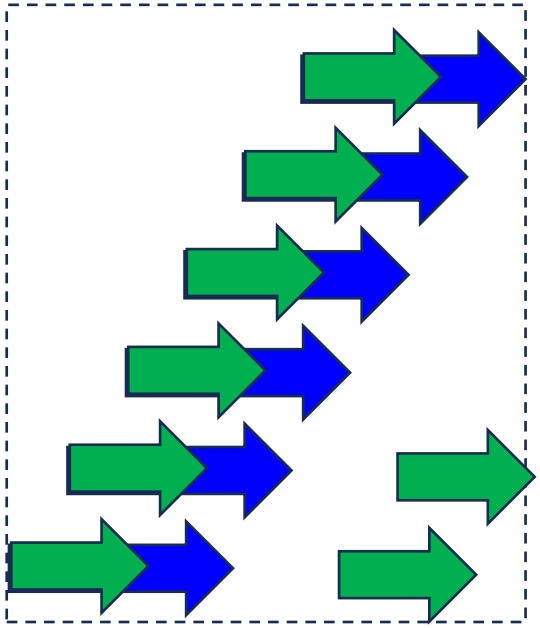
IF your competitor will be here,

Conventional Paradigm

NEW Paradigm

Matter of CHOICE





Shorter LEAD TIME is a powerful value-add that causes CF to strengthen and production to increase

If flow management is implemented (one by one, not all(many) at the same time), as ORELA Shipyard has tried and succeeded, the results will always be a phenomenon. However, if we assume that there is no problem with the current situation, we will consider it a risk to go to the trouble of making changes. This is the point where people hesitate to challenge flow management. In other words, a pinch is a valuable situation that motivates us to take on the challenge.

It is not an immediate problem because we do not do it now. It is enough to challenge when the pinch comes. However, the sooner you do it, the better the state of the system you will achieve. I believe that what our fellow shipyards have been able to implement will be a great incentive for other shipyards to do the same.

If more IPERINDO shipyards take up the challenge, the Indonesian shipbuilding industry will be able to contribute more strongly to the stabilization of the maritime infrastructure in Southeast Asia.

Indonesia and other Southeast Asian markets are waiting for the challenge of the Indonesian shipbuilding industry.

And you are one of those markets.

10. Others

None

TERIMA KASIH

ANNEX 11

Follow-up Activity Report

First FUP

NO	FUP Duration	Date	Shipyard	FUP implementation pros and cons	Management's willingness	Record of presentation	Ambitious Target			Remarks
							pros and cons	Flow imp posioion	Time axis	
1	FUP # 1	Sep-23	PT. Adiluhung Saranasegara Indonesia	DONE	To be check	Not yet	GOOD	Need to improv	Need to improv	The shipyard is the shipyard of the IPERINDO chairman and is expected to implement the plan, but understanding of the chairman is the key and will be enhanced as the PJT progresses.
2	FUP # 1	Sep-23	PT. Orela Shipyard	DONE	Obserbe	DONE	I	I	I	Gaining management's agreement with actual results.
3	FUP # 1	Oct-23	Interim report on the progress of the project (for IPERINDO board members)	DONE	I	I	I	I	I	Mr. Moenir of IPERINDO requested a briefing on the progress of PJT and the post-PJT education plan to achieve sustainability (draft, prepared after receiving a request from Mr. Moenir (IPERINDO side) to prepare a draft on site) before JCC #2, which was held at KAMPUH. Based on the results of the Orela Shipyard's flow management that reduced the LEAD TIME by half, we provided information on the education plan and the preliminary explanatory materials for the next JCC #2. The PJT was motivated by a complaint from Pertamina, a major shipowner, about the proliferation of late deliveries, and they were very impressed with the results of the shortened construction schedule.
4	FUP # 1	Oct-23	PT. Patria Maritim Perkasa	DONE	Observed	DONE	Obserbed	Need to improve	Need to improve	Management's agreement is strong due to the efforts of the participants, but the current state of the plant is abnormally congested, and a bold project freeze is inevitable. Management may understand the situation in their heads, but it takes courage to carry out the project, so careful support is necessary. The reason why the factory is in such a bad condition is that there is an abnormally large amount of work-in-process, and all that is needed is to prohibit the input of such work and freeze the project to improve the internal flow.
5	FUP # 1	Oct-23	PT. Patria Maritim Perkasa							

NO	FUP Duration	Date	Shipyard	FUP implementation pros and cons	Management's willingness to implement	Record of presentation	Ambitious Target			Remarks
							pros and cons	Flow imp posioion	Time axis	
6	FUP # 1		PT. Dok & Perkapalan Kodja Bahari	Not Yet.						Request to reschedule for 2nd FUP.
7	FUP # 1	declining	PT. Dumas Tanjung Perak Shipyard							Not implemented due to poor coordination with management
8	FUP # 1	declining	PT. Dok Perkapalan Surabaya							
9	FUP # 1	Oct 11/12	Other Visit to Palindo & Citura (30 min presentation)	Mr. Budiharto of IPERINDO (marine equipment) told us that he had a shipyard (IPERINDO) in need of a process and that he had 30 minutes to make a presentation, and we shared the essence of this education with him.						
10		11-Oct	Palindo（General manager）	DONE	None	'	'	'	'	They listened to me amicably, but in his position as general manager, he has not reached the point of crisis that the shipyard is in trouble, so there is no next step that he wants to implement.
11		12-Oct	Citura（President 長）	DONE	Observed	'	'	'	'	Since he is the president of the company and is always concerned about issues on the shop floor (stagnant progress), he listened intently and immediately understood that this was a promising way to solve his company's problems. 10 minutes later, he called the manager in charge of production planning to our presentation and began explaining it himself. He then gave the rest of his presentation and showed great promise. He expressed his willingness to participate in the sustainable education plan. It was an unexpected success.
12	FUP # 1	Summary	Upon their return to the shipyard, the participants are busy with their normal work. The participants at the shipyards visited were positive even under such circumstances, and the presentation of ORELA's achievement of halving the LEAD TIME through flow improvement created a situation that is expected to motivate other shipyards to implement the program. In addition, the PATRIA shipyard has been receiving a large number of orders during the booming economy and has been building an excessive number of vessels at the same time, resulting in an extremely poor flow situation. This situation was also observed at several companies in the BASE LINE, and it became necessary to add specific improvement methods to the educational materials. After returning to Japan, we added this information and shared it with the companies. It is estimated that the majority of shipyards will be able to gain improvement opportunities in the future by promoting improvements based on the two pillars of shortening the construction period of individual projects and improving the design of the system. It is essential that the FUP be flexible, taking into account the shipyard's busyness and other factors. It would be effective if the above two pillars are studied in advance. However, the seriousness of the current situation is a prerequisite for the motivation to improve. Overall, the creation of successful cases of improvement at Orella shipyard and IPERINDO Chairman's shipyard will help motivate the Indonesian shipbuilding industry as a whole to improve. The creation of a few leading shipyards will result in a better overall picture.							

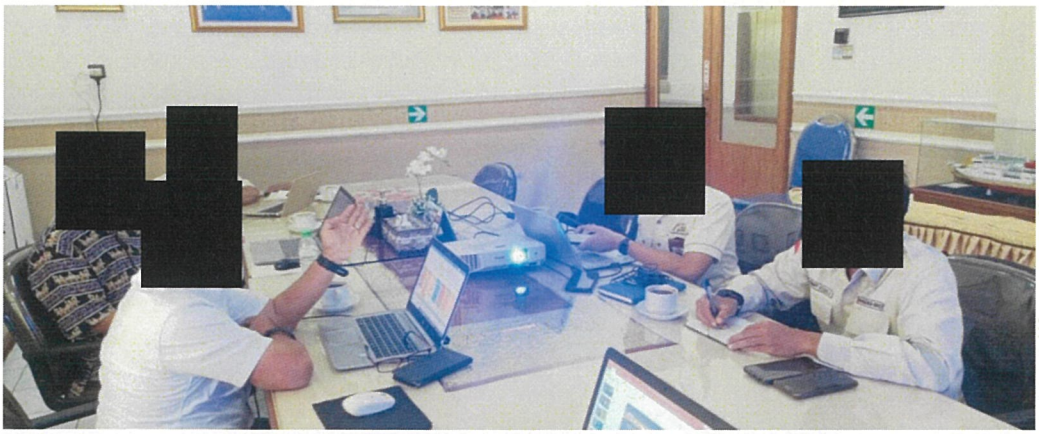


Photo 1 Visit to PT. Adiluhung Saranasegara Indonesia



Photo 2: Visit to Orela Shipyard



Photo 3: Visit to PATRIA Shipyard

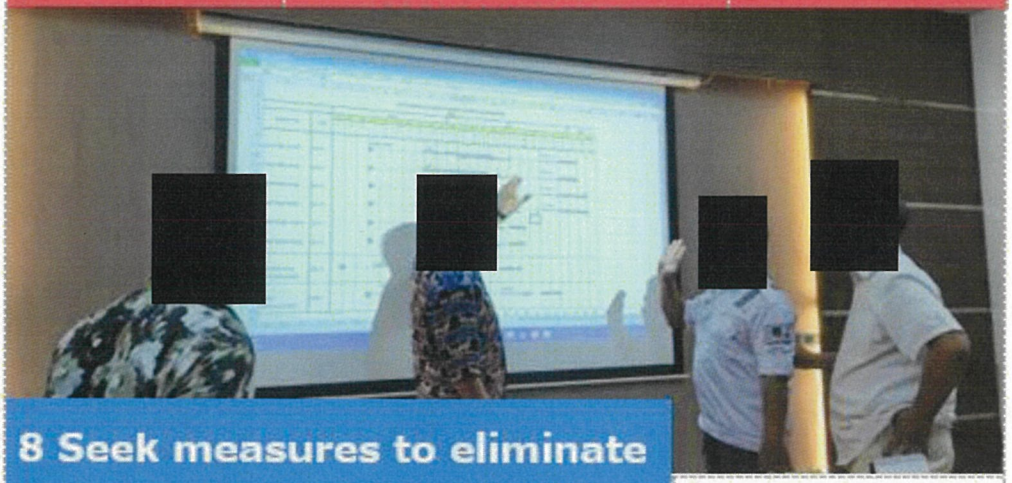
2nd FU

Visit 1 PT. Pahala Harapan Lestari (November 8)
The company had taken on the challenge of implementing flow management on its own, and at the time of the follow-up, had already achieved a significant reduction in the time from launch to delivery (about 75% reduction). They wanted advice from the follow-up team based on their current situation, so we advised them to focus on free cash flow generation rather than profit.
Visit 2 PT. Dumas Tanjung Perak Shipyard (November 14)
Eight projects were in progress simultaneously, all competing for resources, forcing the company to work in a half-hearted manner. The top management of the manufacturing company was reluctant to try new methods, as they had not been able to determine the highest-priority construction projects, believing that the conventional methods would be sufficient.
Destination 3 PT. Adiluhung Saranasegara Indonesia (November 16)
Management has gained understanding, and improvements are being implemented diligently. Experimental results of flow management have been confirmed in some processes. Inspired by the success of PT. Orella Shipyard, they are continuing their high improvement mindset for further improvement.
Visit 4 PT. Orela Shipyard (November 17)
A shipyard that has achieved a significant reduction in the construction period at the time of the first follow-up. Not content with the success of the previous follow-up, the shipyard is now planning to improve the construction schedule for all ongoing projects. The most important thing in project execution is to keep the planned construction period, and we advised them on buffer management to achieve this goal.
Destination 5 PT.SAMUDRA MARINE INDONESIA (November 22 and 23)
Perhaps because the management more than understands the importance of cash flow, they have already secured operations through the end of next year for repair ship construction. The shipyard has a strong top-down management with a strong chairman, but the managers are a multinational group with diversity and the capacity to listen to a variety of ideas. If the basic theory of the thinking process and flow, excluding BIAS, is properly shared, the company has the potential to make great changes.

2023年11月14日（火）

PT DUMAS

Surabaya



8 Seek measures to eliminate simultaneous projects

(Second from right, training participant [redacted])

ONGOING PROJECTS

TAG BOAT x 4 (new ship)

※LEAD TIME: 20 months (2 months longer than usual)

TAG BOAT x 1 newbuild)

MOORING BOAT x 1 (newbuild)

Passenger BOAT x 1 (repair and new accommodation) Used ship built in Japan in 1980.

The original construction schedule called for the simultaneous construction of four TAG BOATs, but based on the lessons learned in the JICA training, the schedule was changed to the construction of two ships at a time. However, the new schedule did not shorten the construction period of each TAG BOAT (the same period as the simultaneous construction of four TAG BOATs), and the lessons learned in the training were not fully utilized. These TAG BOATs are not a series of vessels, but different designs, and the simultaneous construction schedule induces a decline in design quality. In addition, the timing of DOCKING is dominant, and depending on the timing of DOCKING, the risk of late delivery may be latent. The timing of the DOCKING work is absolutely dependent on the completion of the Passenger Ferry, which is currently undergoing repairs, on schedule.

←TAG BOAT One of the reasons for the planned simultaneous construction of four vessels is that the terms of payment from the shipowner are as follows.

The payment is based on the progress of the least advanced of the four vessels, and "if flow management (learning through training) is applied, the payment will not be implemented until work on the fourth vessel is started.

Impression

The will of the top is most important

Each of the projects with the most ongoing will of the top management is assigned a different PM, and naturally, the PMs focus on the smooth progress of the ship in charge. This forces all resources to [redacted] with each other or work in a half-hearted manner. Although there are many issues to be considered, such as funding, construction facilities, and space, I felt that the first step toward a new stage depends on the decision of the top management.

(Personal Suggestion) I believe that the most prioritized construction project is Passenger Ferry. Focus on implementing the handover of this work as soon as possible to eliminate concerns about the timing of the DOCKING of the four TAG BOATs. Delaying the start of TAG BOAT construction is also expected to curb backlogs by "ensuring sufficient design period".

PT DUMAS
LANDING PERAK SHIPYARDS

Thursday, November 16, 2023 | PT.ASSI Adiluhung Sarananusegara Indonesia | Surabaya



Toward Further Improvement

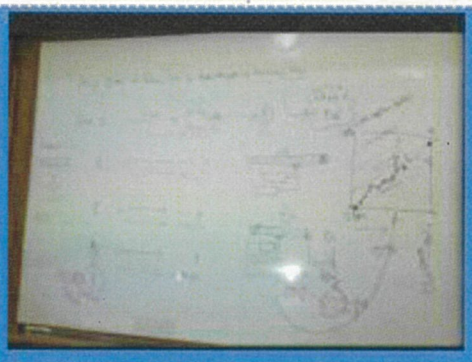
Buffer Management Recommendations

Two training participants welcomed the JICA team's return visit to PT. Although they have "realized a certain amount of reduction in construction period" by the actions taken so far, they still have some problems such as "wasteful work, low quality, and constant backtracking," and are aware that further improvement is needed.

Inspired by the success of PT. Orella Shipyard, they have already collected various existing problems and identified the main causes. However, they have not yet formulated concrete measures, and have simply positioned it as a "Lack of Human resources. Ratio of on-site workers: subcontractors: 90%, main contractors: 10%"



One of the most recent problems was the lack of smooth progress in finishing (bead shaping, cleaning, etc.) before inspection after block assembly was completed. As a measure to improve this problem, we proposed "shortening LEAD TIME by reducing the number of target blocks and concentrating resources" and obtained their willingness to take on this challenge. At the next step after the successful completion of the project, it was decided to apply this management guideline from the start of block construction.



Proposals for problem solving: buffer management

We recommended "buffer management" as well as minimization of work targets and concentration of resources. To implement this, we need to grasp the number of days required for each process (work), plan the work process, monitor the daily progress of the work, and record the differences from the plan. This will enable early detection of delays (problems) and early consideration of necessary countermeasures.

Follow-up Results (Effectiveness)" Driving the shipyards participating in the training to improve their shipbuilding operations. Although we had assumed that the sharing of success stories would encourage the shipyards to improve, we feel that the JICA team's (training partners') thinking and actions have changed as they have witnessed the various problems faced by each shipyard. Although our team's base remains the same, we have come to believe that customized proposals to solve the problems faced by each shipyard will lead to their early problem-solving = success experience. We hope that the accumulation and sharing of successful experiences through the application of small but new thinking by shipyards with a will to improve will have a ripple effect on shipyards that have refused to apply the thinking of this project.





Photo 4: Visit to PT. Pahala Harapan Lestari

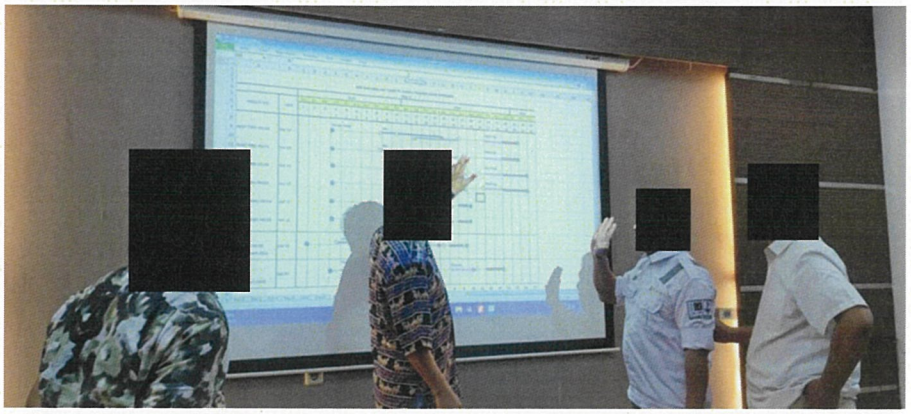


Photo 5 Visit to PT. Dumas Tanjung Perak Shipyard



Photo 6 Visit to PT. Adiluhung Saranasegara Indonesia

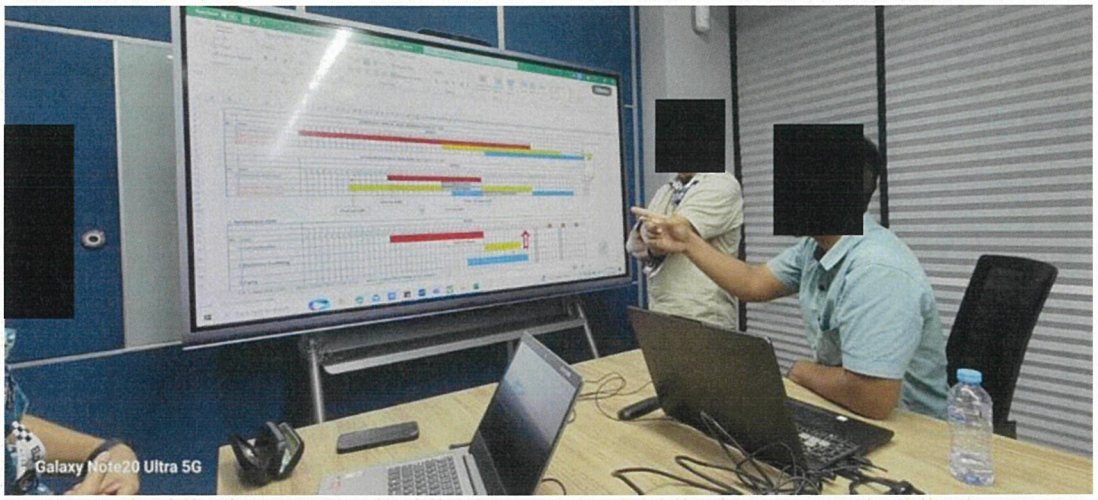


Photo 7: Visit to PT. Orela Shipyard



Photo 8: Visit to PT. IKI

3rd FU

PT. Yasa Wahana Tirta Samudera & PT. Janata Maria Indah (March 4)
Two training partners (Mr. Didid and Mr. Suhandoko) conducted a joint follow-up on the two companies in Semarang district. ▪ PT. Yasa Wahana Tirta Samudera The company reported that it had conducted Proof of Concept (PoC) of flow management in three projects, two new construction and one repair, and had achieved results such as avoiding delivery delays and shortening docking periods. ▪ PT. Janata Maria Indah The company reported that it was able to keep three projects on schedule after freezing one project and giving priority to the other projects. Based on the reports of the above two companies, we advised them on the need to record an appropriate history of implementation, the need to share internally how priorities are determined, and the need to implement buffer management.
PT. Patria Maritim Perkasa (March 6)
Mr. Umar, a training partner and participant, was promoted to factory manager during this training. The vision and mission have been shared with the management (Owner); a promotion project has been established with 8 selected members, and the follow-up meeting was with these members. The PMP president instructed them to implement the lessons learned from the JICA project and make the company an ideal shipyard within five years. The follow-up revealed that the company had not been able to identify the bottlenecks to improve the flow, and the JICA expert leader advised the company to clear these bottlenecks before proceeding with the improvements.
PT. Waruna Shipyard Indonesia (March 13)
As a result of the PoC in the design of the same type of vessel, it was reported that the design construction period was reduced from 17 days to 14 days, confirming that the company is working on the project with sincerity. We shared again that it is very important to define bottlenecks and discuss them internally.
PT. Adiluhung Sarana Segara Indonesia (March 15)
After eliminating parallel work and prioritizing work for approximately 20 drawings in the design department, it was reported that what was planned to take 8 days was completed in 4 days.

The PoC performed in the design section was sufficient to document the history and data, but since it was only one PoC, more PoCs were needed, and ASSI agreed to submit a new PoC plan to the trainer team.
PT. DUKUH RAYA SHIPYARD (March 19)
PoC's have reported docking times reduced by 10% to 40%. Although PoC was conducted on four repaired vessels and their data was well documented, buffer management was poorly implemented and in need of improvement. He suggested that improvement targets be quantified and that buffer management be implemented.
PT. ORELA SHIPYARD (March 23)
The results of the flow management implementation on three vessels were reported. Buffer management was not fully implemented and the construction period was not shortened. Since the company plans to conduct PoC for four more vessels, we suggested that performance data be properly recorded and that buffer management be implemented.

Wednesday, 2024/3/6	PT.PATRIA Banjarmasin	Banjarmasin

This is the shipyard of Umar (who led the learning as a training partner and participant).
He was promoted in training to plant manager and is on a mission to transform the company through this flow management.
The shipyard is one of the most advanced shipyards where the VISION and mission are shared with the management (Owner), and the main way to realize it is by introducing the use of flow management.
The company has already achieved partial success in improving the flow, and is now striving to realize its vision for the next five years.
As the driving body to implement the project, a promotion project has been established with 8 selected members, and the FUP met with these members.
According to Umar, this is the first time that all members are highly motivated to work toward the same goal as this time.
Every morning, they are chanting three watchwords to maintain and grow their cooperation along with IDENTITY.
Since both knowledge and motivation are at a high class level, we did a FUP to elicit further leaps forward.
We sought answers to the following questions.
(1) What are the system constraints here?
(2) What is the bottleneck here?
Bottlenecks are very important in determining the productivity of a system. They are leverage points that, if improved, will increase production.
Even if you know this, you cannot do anything unless you know what the bottleneck is. Knowing is not the same as being able to do something, and this will lead to futile improvements. As expected, although knowledge existed, the specific bottleneck has not been determined. We advised them to clarify this point and implement the improvements. The shipyard is a very promising shipyard.







Photo 9 PT. Yasa Wahana Tirta Samudera and PT. Janata Maria Indah



Photo 10: Visit to PT. Patria Maritim Perkasa



Photo 11 Visit to PT. Waruna Shipyard Indonesia



Photo 12: Visit to PT Adiluhung Sarana Segara Indonesia



Photo 13: Visit to PT. DUKUH RAYA SHIPYARD

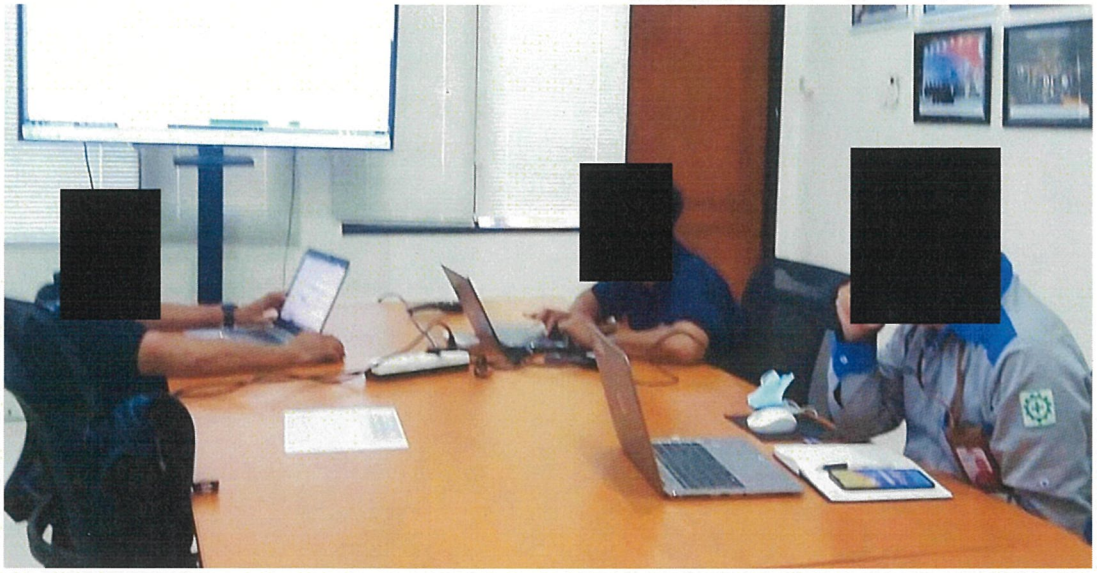


Photo 14: Visit to PT. ORELA SHIPYARD

Attachment 12

Real Improvement

in Indonesia shipyard

and Basic Logic for Improvement

Table of Contents

1 Example of Flow Improvement Implementation at Orela Shipyard 1
1-1Orela Shipyard Participants' Learning 1
1-2 Problems faced by Orela Shipbuilding 3
1-3 Difference in Expected Effects between Conventional Thinking and Flow Orientation 4
2 Biases to which it is easy to fall prey 6

1 Example of flow improvement implementation at Orela Shipyard

1-1Olela Shipyard participants' learnings

There are preconditions for implementing improvements. If the preconditions are the same, the result will be the same thing over and over again. This implies that there is a reason for the lack of successful results. Figure 1 shows a thought process that the same preconditions (ABC) and the same action (X) will cause the same phenomenon (Y). In many shipyards in Indonesia, the phenomenon of late delivery (Y) is a frequent occurrence. To avoid delivery delays, it is necessary to either change the preconditions or change the behavior to change the reason for the delay.

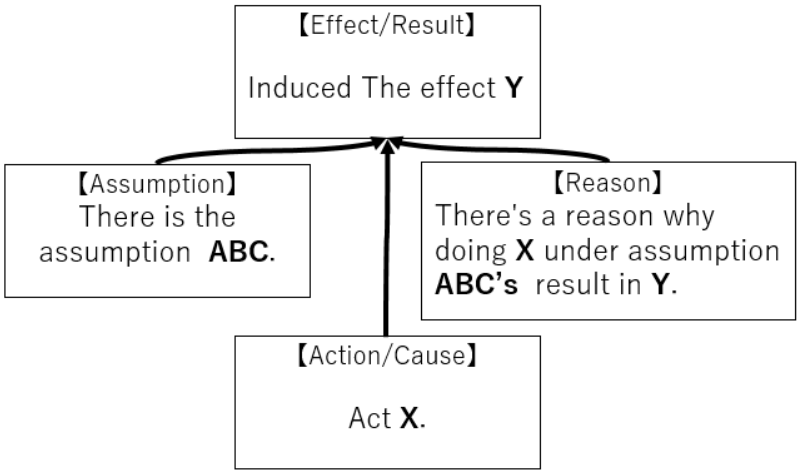


Figure 1 Cause & Effect diagram by TOC Thinking Process

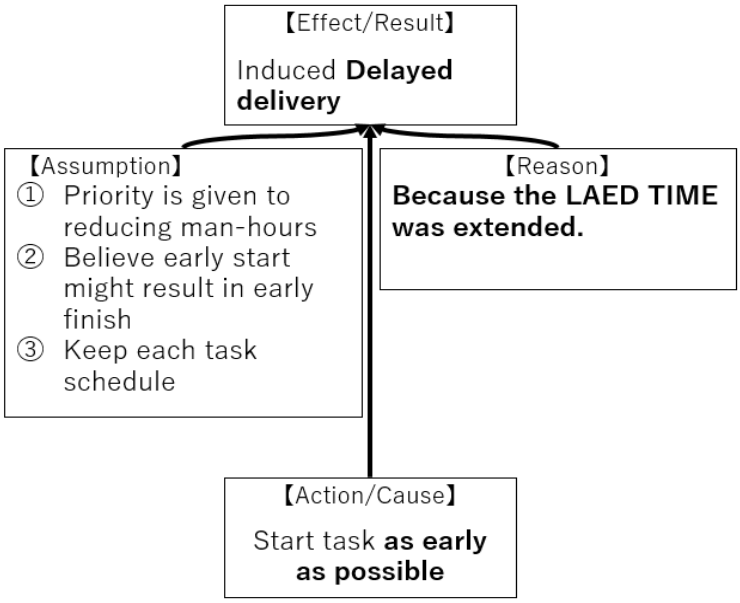


Figure 2 Logic of delay due date

Figure 2 represents the phenomenon of delivery delays in terms of a thought process. It can be seen that shortening the construction period is essential. It is necessary to change the preconditions and realize that the reason for the change in behavior is to shorten the construction period.

All participants, including those from Orela Shipyard, learned the following through flow management education

① The only effective measure for meeting deadlines is to shorten the construction period.
② Injecting a lot of work into the system at same time causes congestion (MUDA) and lengthens LEAD TIME

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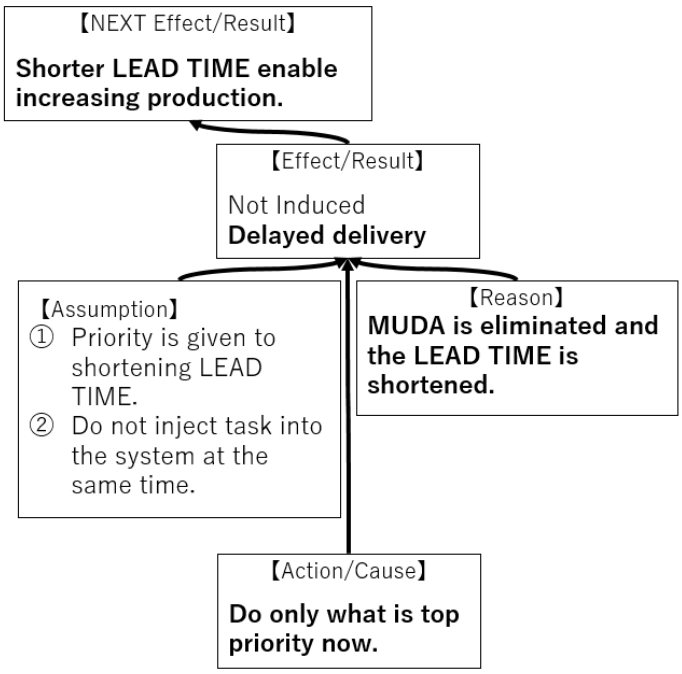


Figure 3 Logic of participants' learning to change the future

Figure 3 shows how learning has changed the assumption for frequent delivery delays. By learning, the company was able to change its behavior, shorten the LEAD TIME, and successfully eliminate the risk of delivery delays.

This logic was effectively understood by playing the "Multitasking Game," a simulation game that allows players to experience the difference between starting three projects at the same time and starting one project at a time, as shown in Figure 4.The game is a scientific learning simulation to experience the difference in construction time between starting three projects at the same time and starting one at a time, as shown in Figure 4 on the left.

The one-by-one method can finish all three projects in approximately half the time.
Comparing one project at a time, the LT is reduced to 1/6 of the time.
Because MUDA is eliminated, being less busy.

We have learned that being busy means being busy because there is a lot of MUDA.

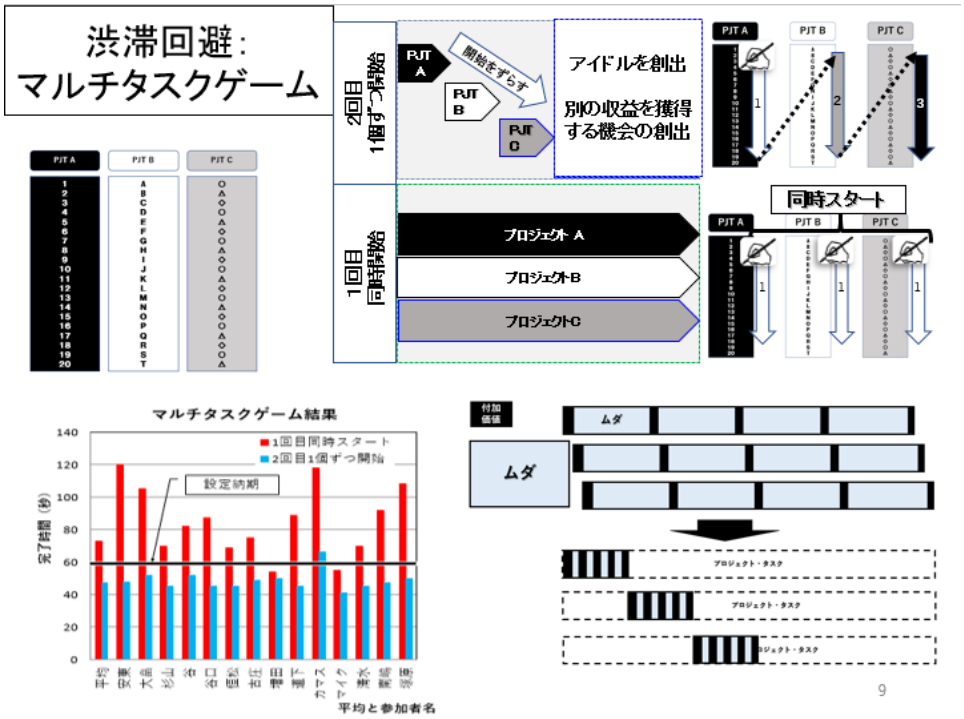


Figure 4 Multitasking game to learn LT shortening experientially

1-2 Problems faced by Orela Shipbuilding

The Indonesian shipbuilding industry imports a lot of onboard equipment due to inadequate domestic procurement supply chain. Orela Shipbuilding also experienced delivery delays in imports from Germany and other countries due to the conflict between Ukraine and Russia, which significantly damaged the construction process. Delays in the delivery of critical equipment, including the reduction gears, caused a situation that delayed the sea trial operation by approximately two months.

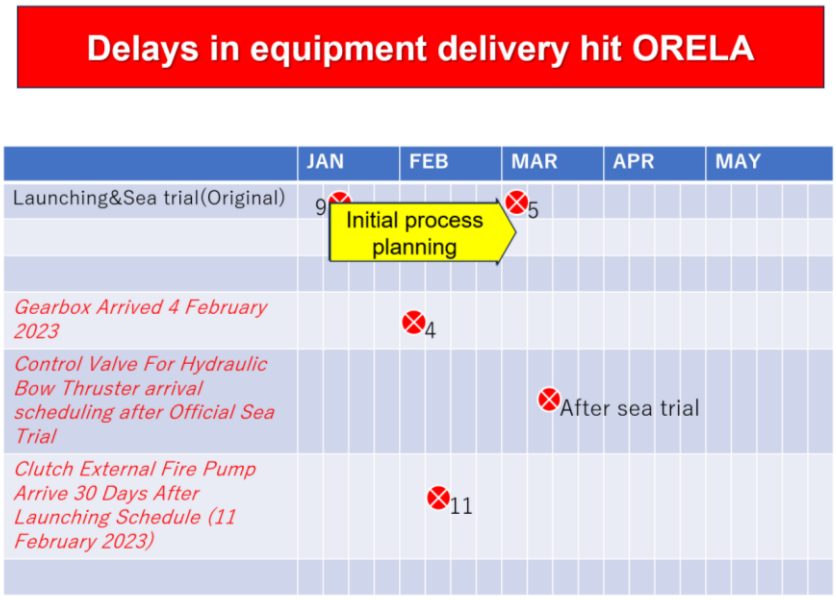


Figure 5: Delayed delivery of imported equipment caused process disruption

1-3 Difference in Expected Effects between Conventional Thinking and Flow Orientation

The upper plan in Figure 6 is the original plan. The middle one is the process rehabilitation plan based on the conventional approach. The plan was delayed approximately two weeks from the original sea trial schedule. One of the participants, Mr.Alice, was the PM of the project and decided to challenge the methods he had learned in flow management to somehow overcome this hardship and came up with the lowest plan. The five processes were executed by changing the traditional overlapping execution method to a plan where the processes were completed one at a time. Then, the process, which would have taken 51 days under conventional thinking, could be completed in 29 days, about half of the original schedule. The sea trial could be done earlier than the original schedule. Since the same resources were used, man-hours could be cut in half, and a great deal of waste could be reduced just by doing a single flow. Naturally, no cost was required for the improvement, and Orela's success was made possible by the courage to try new methods and to learn in advance.

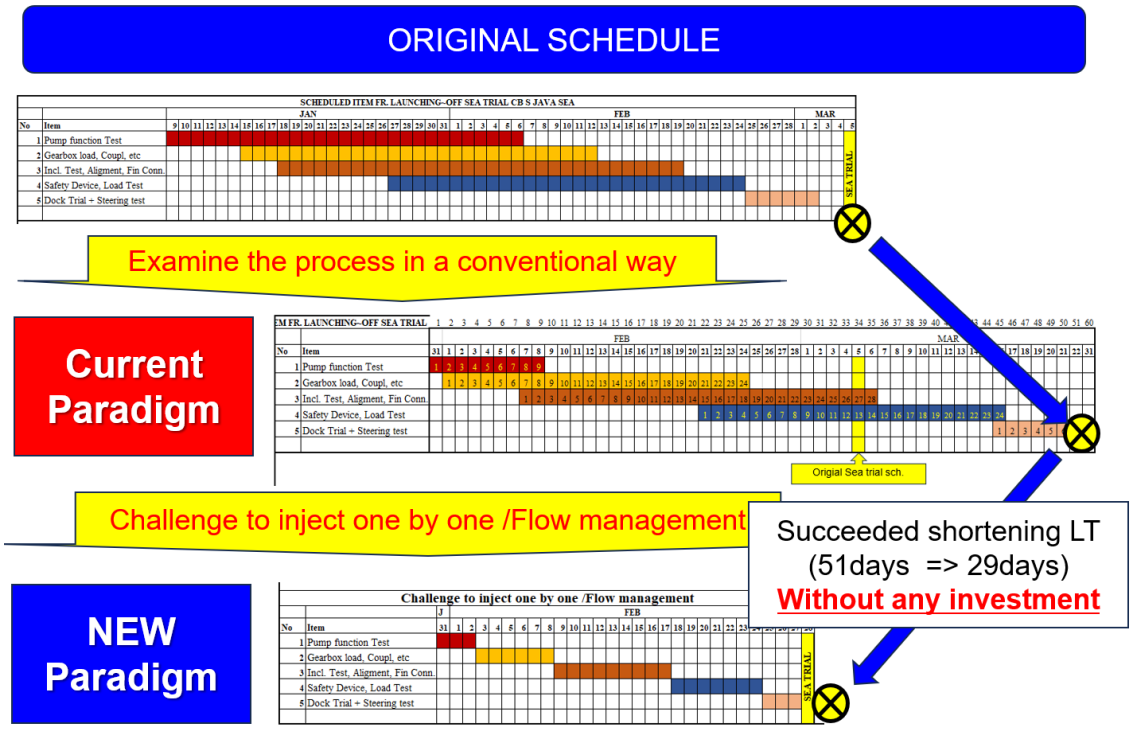


Figure 6: Trends and Results of Orela Shipbuilding's Delivery Delay Measures

2 Biases to which it is easy to fall prey

Learning to change the assumptions in Figures 2 and 3 is key in flow management learning. Figure 7 shows the assumptions made in a situation where delivery delays occur frequently, along with the assumptions made in a flow-oriented system. For those who have not learned flow management, this is not a bias but an important evaluation concept, which can create conflict within the system. Management conflicts will also be drawn out in the absence of this learning process. This demonstrates the importance of learning.

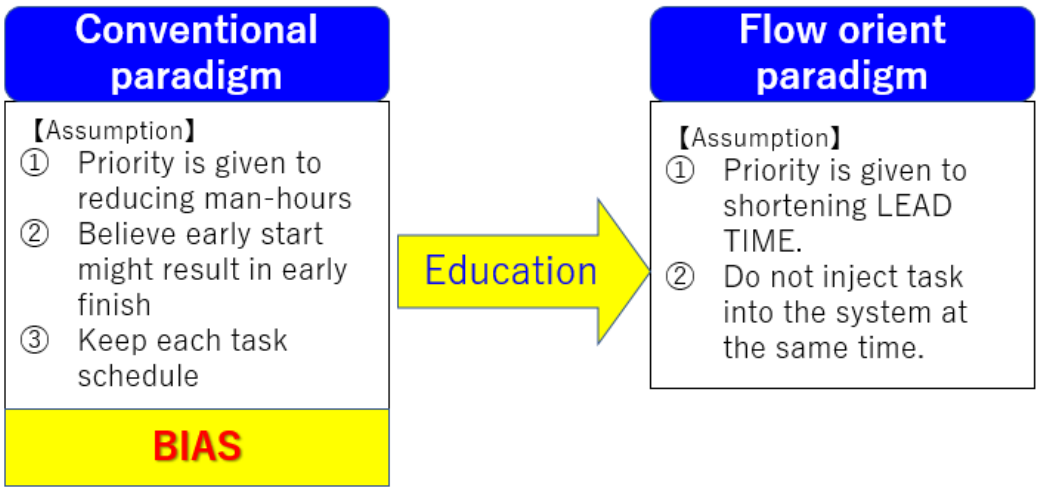


Figure 7: Biases understood by learning flow