# EFFECTIVENESS AND MANAGEMENT STRATEGY OF TUAL ARCHIPELAGO FISHING PORT IN SUPPORTING MEASURED FISHING


## ABSTRACT

Measured Fishing (MF) is the government's effort to preserve fish resources by optimizing economic and social benefits for fishermen and fishery business actors. One of the government's efforts to prepare for the implementation of the MF policy, the Ministry of Maritime Affairs and Fisheries through the Directorate General of Capture Fisheries continues to improve the preparation of fishing ports to carry out these activities. This requires the main role of Archipelago Fishing Port (AFP) Tual as a fishing port managed by the central government to be able to improve its function as an executor of government functions as well as provide services to the fishing fleet and other service users who need these services. This study aims to analyze the effectiveness of the role and function of AFP Tual in supporting Measured Fishing and analyze Tual's AFP strategy in supporting Measured Fishing. The data analysis technique used to measure the effectiveness of the role and function of AFP Tual was score assessment using the *rating scale formula.* Meanwhile, the data analysis technique to determine the AFP Tual strategy was to use the SWOT matrix, the *Internal Factor Analysis Summary* (IFAS) matrix, and the *External Factor Analysis Summary* (EFAS) matrix to determine the SWOT matrix quadrant. The results of this study showed that the effectiveness of the role and function of AFP Tual is at a score of 84.5%, which means that it is very effective in supporting the program measured fishing. Based on the SWOT analysis, it is in favorable conditions so that it can take advantage of the existing opportunities. The strategy that must be implemented in this condition is to support an aggressive growth policy (*growthoriented strategy*) in supporting Measured Fishing so that the goals of MF can be maximally achieved.



*Keywords: AFP Tual, Measured Fishing, Swot*


## 1. INTRODUCTION

Indonesia has the potential for rich fish resources up to 12 million tons per year. To maintain the sustainability of these fish resources, as well as optimize the economic benefits of the fisheries sector, the Ministry of Maritime Affairs and Fisheries is currently working to realize a quota and zone based Measured Fishing (MF) program. MF is one of the government's efforts to preserve fish resources while optimizing economic and social benefits for fishermen and fishery business actors (1). It is hoped that the implementation of MF can also reduce the number of Illegal unreported and unregulated (IUU) Fishing. This is because Tual AFP will serve fishing vessels on an industrial scale with fish marketing targets mostly for export purposes. Therefore, a Fish Catch Certificate (FCC) is needed which is a requirement for trade of fishery products to the European Union (2)

One of the government's efforts to accelerate the readiness for the implementation of the Measured Fishing policy, the Ministry of Marine Affairs and Fisheries through the Directorate General of Capture Fisheries continues to improve the preparation of fishing ports to carry out these activities. Namely the management and utilization of fish resources and their environment starting from preproduction, production, processing, and marketing (3) Fisheries ports function as a means of supporting

increased production, considering how important the development of port infrastructure is, the Fisheries Law states that the Government is obliged to build it (4)(5)

The Tual Archipelago Fishing Port (AFP) plays an important role in providing services to fishing vessels operating in its work area. Efforts to utilize facilities and infrastructure at Tual AFP are expected to be able to support the smooth operation of ships and increase production through catches. Furthermore, it is expected to improve the welfare *of stakeholders* and fisheries communities who use the port (6) In an effort to achieve operational goals, Tual AFP still needs strategic steps for development. This is related to some of the conditions of the facilities identified as still substandard. This study aims to analyze the effectiveness of the role and function and analyze Tual AFP strategy in supporting Measured Fishing.

## 2. RESEARCH METHODS

### 2.1. Time and Place of Research

This research was carried out at the Tual AFP, on Dumar Street, Lodar El Village, South Dullah Island District, Tual City, Maluku Province, which was carried out from November 2023 to January 2024.

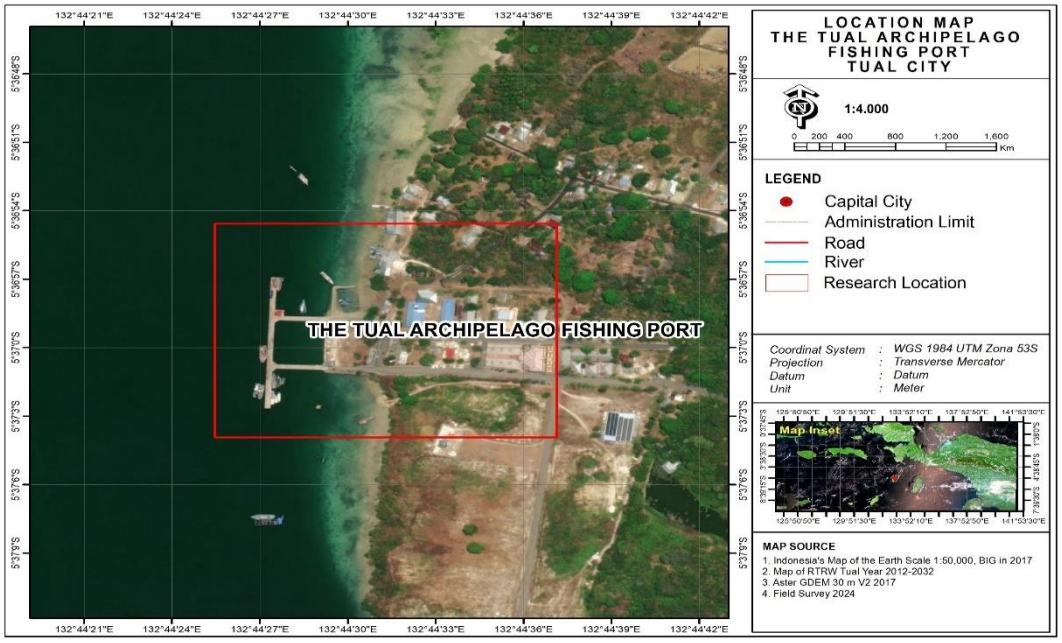


Figure 1. Map of the Research Location of the Tual Archipelago Fishing Port

### 2.2. Materials and Tools

The materials and tools used in this study are stationary to record information and data, cameras to document research activities, laptops to process data and make reports on research results. Interviews were carried out using questionnaires to obtain data from respondents and research sources. Microsoft Excel 2010 was used to process the data of the questionnaire results.

## 2.3. Types and Data Sources

The data used in this study consists of primary data and secondary data (7). Primary data is collected through survey methods and measurements directly in the field (8). This survey was conducted by distributing questionnaires and conducting structured interviews to respondents who had been determined in accordance with the research objectives. The number of respondents selected in this study was 32 people consisting of: 1 (one) Head of Tual AFP, 1 (one) Tual AFP Syahbandar, 10 port service users, and 20 fishermen.

Secondary data is obtained through questionnaires and interviews obtained through annual port data, data from agencies related to Tual AFP activities. The data collected in this study includes: condition of port facilities, port activity data, port operations and fishing port policies.

## 2.4. Data Analysis

The analysis of the effectiveness of the role and function of the Tual VAT facility uses a descriptive analysis technique, namely through a classification process based on problem aspects using *the likert* (9) The data obtained was analyzed quantitatively using *Microsoft Excel*. To determine the number of scores from all items, the following formula was used:

Total Score = Score Weight x Respondent Answer Frequency

The analysis of the effectiveness of the role and function of Tual AFP based on indicators can be calculated using the following formula:

$$\text{Tingkat Efektivitas} = \frac{\text{Expected Score}}{\text{Skor Rill}} \times 100\%$$

Information:

Expected Score : Total score (score weight x frequency of respondents' answers)

Rill Score : Number of scale ranges x number of respondents

The scores obtained will be converted through the standard of effectiveness measures according to the R&D (10) to see the level of achievement as follows:

**Table 1. Standard Measures of Effectiveness**

| Effectiveness Ratio | Achievement Level |
|---|---|
| Below 40% | Highly Ineffective |
| 40 - 59,99% | Ineffective |
| 60 - 79,99% | Quite Effective |
| Above 79.99% | Highly Effective |

Source: Badan Litbang Depdagri and Fisipol-UGM (1991)

Strategy analysis is used to determine Tual's AFP strategy in optimizing its role and function to support MF using the SWOT (*Strengths, Weaknesses, Opportunities, and Threats)* analysis method. This analysis will be described internally through *the Internal Factor Analysis Summary* (IFAS) and externally through the *External Factor Analysis Summary* (IFAS) by determining the *rating* and weight of each strength, weakness, opportunity, and threat owned by the Tual AFP.

## 3. RESULTS AND DISCUSSION

### 3.1. Existing Conditions of Tual AFP

The condition of Tual AFP is the basic thing needed to explain in detail the existing conditions consisting of the condition of facilities and infrastructure, operational activities and human resources. Based on the results of the research, the following data were obtained:

**Table 2. Condition of Facilities and Infrastructure in Tual AFP**

| **A. MAIN PORT FACILITIES** | | | | |
|---|---|---|---|---|
| Number | Type of Facilities | Volume | Manager | Condition |
| 1 | Dock | 176 m | AFP | Good |
| 2 | Exsisting land | 6,17 ha | AFP | Leverage |
| 3 | Industrial land | 10 ha | AFP | Good |
| 4 | Pay | 506 m | AFP | Good |
| 5 | Road Complex | 994 m | AFP | Minor damage |
| 6 | Drainage | 2.454 m | AFP | Minor damage |
| **B. PORT FUNCTIONAL FACILITIES** | | | | |
| Number | Type of Facilities | Volume | Manager | Condition |
| 1 | Permanent Office Building | 126 $m^2$ | AFP | Good |
| 2 | Administration Office Building | 565 $m^2$ | AFP | Good |
| 3 | Fish Marketing Places (FMP) | 462 $m^2$ | AFP | Good |
| 4 | Mesh Repair Sites | 340,28 $m^2$ | AFP | Good |
| 5 | Beacon Lights | 15 $m^2$ | AFP | Good |
| 6 | Water Tank Reservoir | 50.000 ltr | Private | Heavy Damage |
| 7 | Power | 41.500 Va | AFP | Good |

| | | | | |
|---|---|---|---|---|
| 8 | Generator Set | 60 Kva | AFP | Good |
| 9 | Fuel Tank | 135 $m^2$ | Private | Heavy Damage |
| 10 | Hidden Tank | 153 $m^2$ / 45Kl | Private | Good |
| 11 | Workshop | 216 $m^2$ | AFP | Heavy Damage |
| 12 | Dispenser SPBUN | 67 $m^2$ | Private | Good |
| 13 | *Cold Storage* | 400 $m^2$ | Government | Good |
| 14 | *Cold Storage* | 2.657 $m^2$ | Government | Good |
| 15 | Pier lighting spotlights | Led 200-250 Watt | AFP | Good |

**C. PORT SUPPORT FACILITIES**

| Number | Type of Facilities | Volume | Manager | Condition |
|---|---|---|---|---|
| 1 | Places of Worship | 113,16 $m^2$ | AFP | Good |
| 2 | Fishermen's Meeting Hall | 463 $m^2$ | AFP | Good |
| 3 | Guard Post | 33 $m^2$ | AFP | Good |
| 4 | Shop | 210 $m^2$ | Private | Good |
| 5 | Permanent Garage | 47 $m^2$ | AFP | Good |
| 6 | Mess/Guesthouse/Retreat Venue | 222 $m^2$ | AFP | Good |
| 7 | Lampu Penerang Jalan | 250 Watt | AFP | Good |
| 8 | Internet | 100 Mbps | AFP | Good |

*Source: Tual AFP Annual Report, 2023*

The condition of the Tual AFP facility has met the minimum requirements for facilities and infrastructure that must be owned by a type B fishing port to support the operation of fishing vessels. The absence of a breakwater is due to the geographical position of the pier, which is located in a strait that is quite protected from waves. As a result, the pier and port pool are in a relatively safe condition from the impact of the waves.

Based on the observation of the capacity of the pier to accommodate all existing ship activities, fishing vessels operating at Tual AFP have a long number of trip days. As a result, the intensity of arrival is small, which impacts the number of ships operating at the pier. Consequently, there are no long queues.

### 3.2. Analysis of the Effectiveness of the Role and Function of Tual AFP

Effectiveness can be seen from various points of view and can be assessed in various ways. In the management of Tual AFP activities, it is necessary to measure the effectiveness of an activity to see the extent of the goals and objectives that can be achieved. The following are the results of data analysis on the effectiveness of Tual management as seen from various aspects of assessment, including: (a) the condition of mooring facilities and loading and unloading of fish catches; (b) the condition of industrial land, processing facilities and marketing of fishery products; (c) the condition of the ship's supply distribution facilities, workshops, and the issuance of sailing permit documents; (d) supporting human resources (12) Based on the results of the research that has been carried out, more details can be seen in Table 3.

**Table 3. Results of the Analysis of the Effectiveness of the Role and Function of Facilities Tual AFP**

| **A. *Conditions of Mooring Facilities and Loading and Unloading Fish Catches*** | | | |
|---|---|---|---|
| No. | Assessment Indicators | Score | Effectiveness Level |
| 1 | Dock capacity | 84% | Highly effective |
| 2 | Condition of the dock mooring facility | 85% | Highly effective |
| 3 | Port pool area | 86% | Highly effective |
| 4 | Harbor pool depth | 91% | Highly effective |
| 5 | Protected pool from waves | 89% | Highly effective |
| 6 | Loading and unloading facilities | 81% | Highly effective |
| 7 | Safety and order at the time of fish unloading | 93% | Highly effective |
| **B. *Conditions of Industrial Land, Processing Facilities and Marketing of Fishery Products*** | | | |
| No | Assessment Indicators | Score | Effectiveness Level |
| 1 | Industrial land | 79% | *Quite effective* |
| 2 | Fish Landing Sites | 86% | *Highly effective* |
| 3 | *Cold storage* | 74% | *Quite effective* |
| 4 | Distance to public ports/airports | 79% | *Quite effective* |
| **C. *Conditions of Ship Supply Distribution Facilities, Workshop Facilities, and Issuance of Sailing License Documents*** | | | |
| No. | Assessment Indicators | Score | Effectiveness Level |
| 1 | Availability of clean water and fuel oil | 87% | Highly effective |
| 2 | Docking/Slipway *Conditions* | 65% | Quite effective |
| 3 | Condition of the ship repair workshop | 70% | Quite effective |
| 4 | Condition of the mesh repair site | 87% | Highly effective |
| 5 | Availability of Cooperatives | 80% | Highly effective |
| 6 | Ease and smoothness of issuance of licensing documents | 95% | Highly effective |
| **D. Supporting *Human Resources*** | | | |
| No. | Assessment Indicators | Score | Effectiveness Level |
| 1 | Syahbandar | 95% | Highly effective |
| 2 | Facilities Officer | 85% | Highly effective |
| 3 | Data collection officer | 92% | Highly effective |
| 4 | Shipworthiness inspectors | 89% | Highly effective |
| 5 | Fishery product quality inspection officer | 87% | Highly effective |
| **Total** | | **1.859%** | |
| **Average** | | **84.5%** | ***Highly Effective*** |

*Source: Primary Data Processed, 2024*

Based on Table 3, it can be seen that the average score of the assessment variable is 84.5%, in general, the management of the role and function of Tual VAT facilities has been well managed and very effective, but nevertheless there are still some facilities that still have shortcomings in maintenance. Therefore, development efforts are required to improve and complete the inadequate facilities and infrastructure, ensuring they effectively support the operational performance of anchored fishing vessels.

### 3.3. Analysis of Tual AFP Strategy in Supporting MF

#### 3.3.1. SWOT Analysis

Based on the identification of internal and external factors, a SWOT analysis matrix (12) was then used to obtain alternative strategies used by Tual AFP in supporting the MF program, which can be seen in Table 4.

**Table 4. Tual Archipelago Fishing Port in SWOT Matrix**

| ***Internal*** / ***External*** | ***Strength*** | ***Weakness*** |
|---|---|---|
| | 1. Tual AFP facilities that are quite adequate **(S1)**<br>2. Easy access from vital facilities such as airports and public ports **(S2)**<br>3. Sailing ship licensing services are relatively easy **(S3)**<br>4. The location of the Tual AFP is in the middle of the city so that access to obtain ship supply logistics is relatively easy **(S4)**<br>5. Adequate access to clean water and fuel **(S5)** | 1. The location of Tual AFP which is considered to be far from *the Fishing Ground* **(W1)**<br>2. Lack of investors so that a lot of land has not been used **(W2)**<br>3. There are no *docking facilities,* workshops that are not yet operating, closed goods stacking sites, Wastewater Treatment Plants, and fire extinguishing installations (*hydrants*) **(W3)**<br>4. Integrated services are not yet available as one of the parameters for the development of the Integrity Zone and Corruption-Free Zone **(W4)** |
| ***Opportunities*** | **S-O Strategy** | **W-O Strategy** |
| 1. There is still a large enough land to be rented to investors **(O1)**<br>2. The relationship between Tual AFP and other fishing ports around it **(O2)**<br>3. High market demand for fishery products **(O3)**<br>4. There is support for government regulations and policies **(O4)**<br>5. Public support for the existence of Tual AFP **(O5)** | 1. With adequate facilities and infrastructure support, sufficient capacity and competence of human resources, and industrial land that is still quite large, Tual AFP can promote and socialize potential investors through exhibition activities, online media and face-to-face in order to invest in Tual AFP **(S1, S2, S3, S4, O1, O2, O3, O5)**<br>2. Adding and developing basic and functional facilities such as piers, industrial area roads, docking, clean water and other supporting facilities in order to support the | 1. Attracting investors to take advantage of the industrial estate in Tual AFP to build *cold storage,* fish processing units and other supporting infrastructure to accommodate fishery products and increase ship supply capacity such as clean water and oil **(W2, W3, O1, O3, O4, 05)** |

| | | |
|---|---|---|
| | activities of industrial-scale fishing vessels.**(S1, S5, O1, O3, O4, O5)**<br>3. Carry out intensive promotion and publication in order to attract investment to build *cold storage,* fish processing units and other supporting infrastructure. **(S1, S2, S3, S4, S5, O1, O3, O4, O5)**<br>4. Asking the central government to allocate some fishing vessels to be based in Tual AFP. **(S1, S3, O1, O4, O5)** | |

*Source: Primary Data Processed, 2024*

### 3.3.2. IFAS and EFAS Matrix Analysis

Determining the strategy of each *internal* and *external environment,* then scoring will be carried out to determine the position of the Tual AFP strategy quadrant, which is as follows (Tables 5 and 6):

**Tabel 5. Matrix *Internal Factor Analysis Summary* (IFAS) Tual AFP**

| No. | Strength | Rating | Weight | Score |
|---|---|---|---|---|
| 1 | Tual AFP facilities that are quite adequate | 3 | 0,20 | 0,6 |
| 2 | Easy access from vital facilities | 3 | 0,15 | 0,45 |
| 3 | Sailing ship licensing services are relatively easy | 3 | 0,20 | 0,6 |
| 4 | Tual AFP location in the middle of the city | 4 | 0,15 | 0,6 |
| 5 | Adequate access to clean water and oil | 3 | 0,20 | 0,6 |
| **TOTAL** | | | **1,00** | **2,85** |
| **No.** | **Weakness** | **Rating** | **Weight** | **Score** |
| 1 | Tual AFP location far from *Fishing Ground* | 2 | 0,40 | 0,40 |
| 2 | Lack of investors so many unused land | 1 | 0,20 | 0,20 |
| 3 | There are no *docking* facilities, workshops that are not yet operating, closed storage areas, wastewater treatment plants, and fire fighting plants. | 1 | 0,20 | 0,20 |
| 4 | There is no integrated service yet available as one of the parameters for the development of the Integrity Zone. | 1 | 0,20 | 0,20 |
| **TOTAL** | | | **1** | **1** |
| **x = S – W** | | | | **1,85** |

*Source: Primary Data Processed, (2024)*

Tabel 6. Matrix *External Factor Analysis Summary* (EFAS) Tual AFP

| No. | Opportunities | Rating | Weight | Score |
|---|---|---|---|---|
| 1 | There is a large enough land to be rented to investors | 4 | 0,20 | 0,80 |
| 2 | The relationship between Tual AFP and other fishing ports | 3 | 0,15 | 0,45 |
| 3 | High market demand for fishery production | 4 | 0,20 | 0,80 |
| 4 | Regulatory and government policy support | 4 | 0,20 | 0,80 |
| 5 | Public support for the existence of Tual AFPT | 3 | 0,15 | 0,45 |
| **TOTAL** | | | **1** | **3,30** |
| **No.** | **Threats** | **Rating** | **Bobot** | **Score** |
| 1 | There are other fishing ports that are closer to *the Fishing Ground* | 2 | 0,15 | 0,30 |
| 2 | The transportation and marketing of fish distribution has not been smooth due to the limited number of cargo ships that will carry fishery products | 1 | 0,20 | 0,20 |
| 3 | Uncertain weather and safety factors at sea | 2 | 0,20 | 0,40 |
| 4 | The security factor at Tual AFP is still minimal due to the lack of security officers | 1 | 0,20 | 0,20 |
| 5 | There are still fishermen who do not attach importance to cleanliness around the pier area | 1 | 0,20 | 0,20 |
| **TOTAL** | | | **1** | **1,3** |
| **y = O – T** | | | | **2** |

*Source: Primary Data Processed, (2024)*

Based on the results of the analysis that has been carried out, it is obtained that the value (x) or internal factor is 1.85 and the value (y) or external factor is 2. From these results, it can be seen that the position of the quadrant of Tual AFP SWOT strategy is as follows (Figure 2):

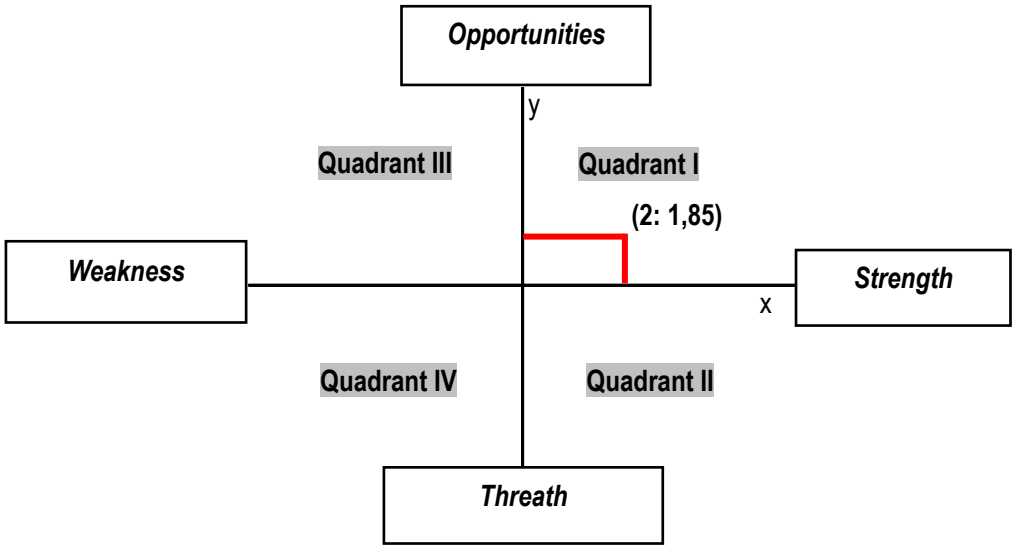


Figure 2. Quadrant Position of SWOT Strategy in Tual AFP

Based on Figure 2, it is known that Tual AFP strategy position is in quadrant I, which can be interpreted as a very favorable situation. The Tual AFP has opportunities and strengths so that it can take advantage of the existing opportunities. The strategy that must be implemented in this condition is to support aggressive growth policies (*growthoriented strategy*). Recommendations for strategies that can be carried out by the Tual AFP, especially in supporting the Measured Fishing (MF) Program, are as follows:

1. Developing facilities and infrastructure to be more adequate such as adding and developing wharves, industrial area roads, *docking*, clean water and other supporting facilities in order to support the activities of industrial-scale fishing vessels.
2. Increasing the capacity and competence of human resources,
3. There are efforts to utilize industrial land by promoting and socializing potential investors through exhibition activities, online media and face-to-face in order to invest in Tual AFP.
4. Coordinating and synergizing with related agencies to strive for the delivery of fishery products directly from Tual to the destination country and maximize the quality of services by integrating several types of services such as sailing permits, immigration, fisheries supervision, quality control, and weather information in one place.
5. Increase the number and quality of human resources including security personnel and implement good service standards and environmental management.

## 4. CONCLUSION

The effectiveness of the role and function of the Tual AFP facility as a whole shows very effective results in supporting Measured Fishing (MF). Tual AFP management strategy in supporting MF is in the first quadrant position, namely the S-O (*Stregth-Opportunities*) Strategy by utilizing or optimizing existing strengths to capture the greatest opportunities so that the implementation of MF through the post-production Non-Tax National Revenue withdrawal mechanism can run.

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