



MARINE TECHNOLOGY SOCIETY – DP COMMITTEE

DP EQUIPMENT TESTING SUBCOMMITTEE

ASSET REACTIVATION ASSESSMENT TABLE – RUBRIC & INSTRUCTIONS

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EXECUTIVE SUMMARY

As noted in the main Guidance Document, lay-up categories are commonly referred to as “hot,” “warm,” and “cold.” These categories may be defined based on numerous factors and can vary greatly between Class societies, regulatory bodies, and other industry groups. Due to the various interpretations, the Guidance Document focuses on the diverse factors to be considered when reactivating an asset from lay-up.

These factors are laid out within Section 3 of the Guidance document and again here, in this addendum to the primary Guidance. Also included in this addendum is a sample rubric and accompanying instructions for its use. This serves as an example only and can be modified as deemed appropriate by individual stakeholders.

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CONTENTS

EXECUTIVE SUMMARY	3
CONTENTS.....	4
1. REACTIVATION ASSESSMENT TABLE	5
1.1 General.....	5
1.2 Definitions.....	5
1.3 Application of Table and Guidance Document.....	6
1.4 Scheduling.....	7
2. SAMPLE RUBRIC	9
2.1 Overview.....	9
2.2 Instructions	9

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1. REACTIVATION ASSESSMENT TABLE

1.1 General

- 1.1.1 The Reactivation Assessment Table included below illustrates the four core categories to consider when planning and undertaking reactivation activities and lists the factors that may affect the determination of where an asset falls within those categories.
- 1.1.2 The Reactivation Assessment Table can be applied at the asset level or at the level of individual vessel systems or equipment units. Taken together, focused assessments at the system and equipment levels will provide a more robust determination of the overall status of the full asset (see also 1.4, below).
- 1.1.3 This guidance provides assistance in defining these categories and factors but final designation of an asset's status is left to the owner / operator, the applicable Class society and regulator, and the asset's charterer / client (if applicable).

1.2 Definitions

- 1.2.1 The categories of Planned Maintenance and Lay-Up Duration represent the two primary, quantifiable categories while Environmental Conditions and Lay-Up Preparation are more subjective.
- 1.2.2 The table further breaks down Planned Maintenance and Lay-Up Preparation categories into specific factors that further define these two core categories. Categories are further detailed below.
- 1.2.3 Lay-Up Duration is broken into five (5) time intervals listed across the top of the table. Intervals are broken down based on general maintenance periods frequently found within equipment maintenance programs. These intervals are used as guidance only and should be used in conjunction with the remaining three categories before a final determination of an asset's status is made.
- 1.2.4 Planned Maintenance makes up the left side of the table and considers the level of planned maintenance activities applied to installed systems and equipment on a specific asset. Activities are recorded in maintenance systems providing evidence of actions carried out, parts replaced, etc. Further definition is provided as follows:
- Prescriptive – All normal maintenance activities take place as outlined within the applicable PMS. Activities are executed in a scheduled manner and adhere to OEM and industry recommendations.
 - Routine – Most normal maintenance activities take place as scheduled within the applicable PMS. Maintenance based on running hours may not take place on unused equipment.
 - Basic – Critical maintenance activities take place as scheduled within the applicable PMS.
 - Minimal – Periodic checks are made on equipment to ensure no damage or potential major maintenance issues.
 - None – No planned maintenance is carried out.

- 1.2.5 Environmental Conditions refers to the conditions in which the asset is laid-up, the conditions on board the asset itself, and/or storage conditions for equipment (where applicable). The category takes into consideration humidity, temperature, and cleanliness, and reflects interior / exterior conditions. Consideration should also be given to mitigations such as HVAC, exposure to elements, preservation techniques, etc.
- 1.2.6 Lay-Up Preparation considers the amount of planning, maintenance, and preventive measures carried out prior to the lay-up of an asset. Preparation levels are further defined below.
- Prescriptive – The asset was laid-up based on a strict lay-up plan.
 - Preserve – Systems and equipment were subject to rigorous methods of preservation and protection. All systems were isolated and sealed as necessary and protected from the effects of heat and humidity.
 - Protect – Reasonable steps were taken to protect installed systems and equipment from environmental impact (e.g. sealing, desiccant, heaters, etc.). Equipment and systems were isolated and secured as necessary.
 - Isolate – Installed systems were shut down and secured. Valves, circuit breakers, etc., were secured in open / closed position as appropriate for specific systems.
 - Shut Down – Systems and equipment were shut down with little or no means of protection or preservation.
- 1.2.7 It should be noted that all categories of Lay-Up Preparation are defined on a case-by-case basis and are provided as guidance only. Each level of preparation listed above varies based on the length of lay-up, maintenance category, etc. Irrespective of any one category, the final status determination may shift based on all factors taken together. Refer also to the application of the Reactivation Table as described below.
- 1.3 Application of Table and Guidance Document**
- 1.3.1 The Reactivation Assessment Table should be read as two separate tables using both objective and subjective data to support planning and activities during reactivation.
- 1.3.2 As noted above, the table can be applied generally to the asset to give a high-level view of its status prior to reactivation. A more robust determination of this status may be obtained by applying the Assessment Table at the individual equipment and/or system level and using the results to generate a more detailed analysis.
- 1.3.3 “Planned Maintenance” and “Lay-Up Duration” represent two sources of quantifiable data. The length of lay-up should be cross referenced with the level of planned maintenance applied to the asset and its installed systems and equipment. The level of planned maintenance applied to the asset during lay-up should be supported by records and documentation of maintenance activities.
- 1.3.4 A secondary analysis of the Environmental Conditions and Lay-Up Preparation categories can then be used to further support the primary analysis or revise its conclusions. The conditions to which the asset and equipment were exposed during lay-up should be considered and then cross referenced with the level of lay-up preparation applied to same. Lay-up preparation may be supported by formal documentation (such as an approved lay-up plan) or may be corroborated through informal evidence provided by the asset owner / operator, shipyard, etc.

- 1.3.5 Following consideration of the primary analysis and any potential positive or negative effects of the secondary factors, an asset's status can be determined. This status should be discussed and a consensus reached between all commercial and regulatory stakeholders. Once finalized, this status can be used to assist in guiding an approach to reactivation using the guidance provided herein.
- 1.3.6 Status categorizations are briefly defined in the lower portion of the table and further described below. These definitions are intended only to support the decision-making process. Final designation of an asset's status is left to the owner / operator, in agreement with other concerned stakeholders.
- 1.3.7 **Green – Active:** The asset has been maintained in working status and is ready for immediate service.
- 1.3.8 **Blue – Ready:** The asset has been maintained in a reduced working status and is ready for service following review of maintenance tasks and minor operational checks.
- 1.3.9 **Yellow – Idle:** The asset has been laid-up for an extended period and/or has had reduced maintenance performed. A full review of planned maintenance should be considered and necessary operational checks carried out prior to service.
- 1.3.10 **Red – Inactive:** The asset and its installed equipment and systems have been static with little or no planned maintenance performed. A full critical maintenance review and operational testing regimen is recommended.
- 1.3.11 The reactivation procedures outlined in this guidance are general in scope and can be applied regardless of the agreed status. However, the extent to which the procedures are applied should be at the discretion of the asset operator in conjunction with OEM recommendations. Further stringent interpretations of guidelines may be deemed necessary by Class / regulators or following discussion and agreement with clients and charterers.
- 1.4 Scheduling**
- 1.4.1 To assist in reactivation planning and budgeting, it can be assumed that both time commitment and cost generally increase when reactivating an asset from each of the *Active*, *Ready*, *Idle*, and *Inactive* categories, respectively. Estimates may only be inferred through interpretation of the Reactivation Guidance Table; exact costs can only be determined on an individual, case-by-case basis.
- 1.4.2 The Reactivation Guidance Table can be used as a tool to generate estimated time commitments based on the final, agreed status of the asset. More robust estimates may be generated by applying the focused assessments at the system or individual equipment levels.
- 1.4.3 OEMs, shipyard managers, third party consultants, etc. may be consulted to provide expertise during the assessment process based on the factors outlined on the table for an asset, a given system, or individual piece of equipment. Additional insight based on newbuild or refit commissioning experience may assist in generating scheduling estimates based on final assessment category.

Table 1: Reactivation Guidance Table

		LAY-UP DURATION						
		<30 Days	<90 Days	<180 Days	<365 Days	>1 Year		
PLANNED MAINTENANCE	Prescriptive						Prescriptive	LAY-UP PREPARATION
	Routine						Preserve	
	Basic						Protect	
	Minimal						Isolate	
	None						Shut Down	
		Dry / Clean / Cool >>>>>>>			Humid / Dirty / Hot		SECONDARY 	
		ENVIRONMENTAL CONDITIONS						

ACTIVE	Asset is operational.
READY	Asset is ready for operation following maintenance review and operational checks.
IDLE	Asset may not be ready for immediate operation; full maintenance review and operational checks/testing should be considered before operations resume.
INACTIVE	Asset is not operational; critical maintenance review and operational testing recommended.

2. SAMPLE RUBRIC

2.1 Overview

2.1.1 This section provides a general example of the application of a rubric to the assessment table above. This serves only as an example and can be modified or revised based on the needs of individual stakeholders.

System or Equipment Specific Assessment / Full Asset Assessment - Combined & Weighted								
PRIMARY		LAY-UP DURATION					LAY-UP PREPARATION	
		<30 Days	<90 Days	<180 Days	<365 Days	>1 Year		
PLANNED MAINTENANCE	Prescriptive	25	24	20	18	9	Prescriptive	
	Routine	23	22	13	11	8	Preserve	
	Basic	21	17	12	10	7	Protect	
	Minimal	19	16	6	5	3	Isolate	
	None	15	14	4	2	1	Shut Down	
		Dry / Clean / Cool		>>>>>>		Humid / Dirty / Hot		SECONDARY
		ENVIRONMENTAL CONDITIONS						
SYSTEM AND / OR EQUIPMENT	DP Control & Monitoring Systems	Power Generation & Distribution	Main & Auxiliary Engines	Propulsion & Thrusters	Marine & Auxiliary Systems	TOTAL ASSET SCORE		
Primary Score:						0		
Secondary Score:						0		
TOTAL WEIGHTED SCORE:	0	0	0	0	0	0		

2.2 Instructions

2.2.1 System / Equipment Assessment:

- (1) Each system is scored, first considering the Primary categories of Lay-Up Duration and Planned Maintenance. The score is then inserted into the appropriate cell.
- (2) A follow up assessment is performed using the Secondary categories of Environmental Conditions and Lay-Up Preparation. This score is likewise input into the appropriate cell.

- (3) Each system then receives a Total Weighted Score as calculated using the Primary and Secondary assessment score. The weighting can be determined on a case-by-case basis. An example is shown below using a simple average of the Primary and Secondary assessments:

$$Total\ Weighted\ Score = \frac{Primary\ Score + Secondary\ Score}{2}$$

- (4) Each system undergoes a similar process and receives a Total Weighted Score calculated as above.

2.2.2 Full Asset Assessment:

- (1) Using the Total Weighted Score of the individual system assessments, the full asset may be assessed, as demonstrated in the example below:

$$Asset\ Total\ Weighted\ Score = \frac{Sum\ of\ individual\ Total\ Weighted\ Scores}{5}$$

- (2) The asset’s overall status is then determined based on the same rubric as used for the individual system assessment with the colored categories defined according to the original table and definitions provided in Section 1.

ACTIVE	Asset is operational.
READY	Asset is ready for operation following maintenance review and operational checks.
IDLE	Asset may not be ready for immediate operation; full maintenance review and operational checks/testing should be considered before operations resume.
INACTIVE	Asset is not operational; critical maintenance review and operational testing recommended.

Green – Active: The asset has been maintained in working status and is ready for immediate service.

Blue – Ready: The asset has been maintained in a reduced working status and is ready for service following review of maintenance tasks and minor operational checks.

Yellow – Idle: The asset has been laid-up for an extended period and/or has had reduced maintenance performed. A full review of planned maintenance should be considered and necessary operational checks carried out prior to service.

Red – Inactive: The asset and its installed equipment and systems have been static with little or no planned maintenance performed. A full critical maintenance review and operational testing regimen is recommended.