GUIDE FOR THE CLASSIFICATION OF

PRE-LAID STATIONKEEPING SYSTEMS FOR MOBILE OFFSHORE UNITS

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Foreword

This Guide provides the evaluation procedure and technical requirements to verify the eligibility of a pre-laid stationkeeping system for the optional symbols **(P-PL)** (Position (pre-laid) mooring system), **(M-PL)** (Position (pre-laid) mooring equipment) and optional notations **TAM-PL** (Automatic position control system) and **TAM-PL (Manual)** (Manual position control system) for mobile offshore units.

Mobile offshore units provided with position (pre-laid) mooring systems, in accordance with this Guide, will be designated in the *Record* by the optional classification symbol **(P-PL)**. Only mooring equipment and components which are carried onboard the unit will be part of Class. Pre-laid mooring components and accessories such as anchors, piles, chains and other appurtenances that are already installed at the offshore location will not be part of Class.

Mobile offshore units provided with thrust assist system and position (pre-laid) mooring system, in accordance with this Guide, will be designated in the *Record* by the optional classification notation **TAM-PL** or **TAM-PL (Manual)**. Only mooring equipment and components which are carried onboard the unit will be part of Class. Pre-laid mooring components and accessories such as anchors, piles, chains and other appurtenances that are already installed at the offshore location will not be part of Class.

This Guide becomes effective on the first day of the month of publication.

Users are advised to check periodically on the ABS website www.eagle.org to verify that this version of this Guide is the most current.

We welcome your feedback. Comments or suggestions can be sent electronically by email to rsd@eagle.org.

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SECTION 1 Introduction

1 General *(1 June 2016)*

The requirements for conditions of Classification for the entire units and offshore structures are contained in the ABS *Rules for Conditions of Classification – Offshore Units and Structures (Part 1)*. Additional requirements specific to pre-laid stationkeeping systems are contained in this Guide.

The provisions of this Guide apply to mobile offshore units operating with pre-laid stationkeeping systems.

- Section 2 of this Guide provides the technical requirements for the optional symbol: **(P-PL)** (Position (pre-laid) mooring systems) for mobile offshore units.
- Section 3 of this Guide provides the survey requirements for the optional symbols: **(P-PL)** (Position (pre-laid) mooring systems) and **(M-PL)** (Position (pre-laid) mooring equipment) for mobile offshore units.
- Section 4 of this Guide provides the technical requirements for the optional notations: **TAM-PL** (Automatic position control system) and **TAM-PL (Manual)** (Manual position control system) for mobile offshore units.
- Section 5 of this Guide provide the survey requirements for the optional notations: **TAM-PL** (Automatic position control system) and **TAM-PL (Manual)** (Manual position control system) for mobile offshore units.

At the request of the Owners, the pre-laid stationkeeping systems may be verified for compliance with the provisions of Sections 2 through 5 as applicable, with the appropriate class symbol or notation assigned.

3 Position (Pre-laid) Mooring Systems

When requested by the Owner, ABS will certify the position (pre-laid) mooring capability of the unit in accordance with the requirements outlined in Section 2 of this Guide. A unit so certified for position mooring may be designated in the *Record* by the symbol **(P-PL)** placed after the symbols of classification in the *Record*, thus: ✠ **A1 (P-PL)**.

5 Position (Pre-laid) Mooring Equipment

When requested by the Owner, the symbol **(M-PL)** may be placed after the symbols of classification in the *Record*, thus: ✠ **A1 (M-PL)**, which will signify that the mooring equipment, chain or wire rope (carried onboard the unit) which have been specified by the Owner for position (pre-laid) mooring have been tested in accordance with the specifications of the Owner and in the presence of a Surveyor.

7 Thruster-Assisted Mooring Systems (Automatic or Manual Position Control System) *(1 June 2016)*

When requested by the Owner, ABS will certify the TAM (pre-laid) capability of the unit in accordance with the requirements outlined in this Guide.

TAM (pre-laid) systems, which are fitted with a TA system that is capable of automatically maintaining the position and heading of the unit under specified maximum environmental conditions having an independent centralized manual position control with automatic heading control that have been built, installed and commissioned to the satisfaction of the Surveyors to the full requirements of this Guide, where approved by the Committee for service for the specified design environmental conditions, will be classed and distinguished in the ABS *Record* by the notation ✠ **A1 (TAM-PL)**.

TAM (pre-laid) systems, which are fitted with a TA system with centralized manual position control and automatic heading control to maintain the position and heading under specified maximum environmental conditions that have been built, installed and commissioned to the satisfaction of the Surveyors to the full requirements of this Guide, where approved by the Committee for service for the specified design environmental conditions, will be classed and distinguished in the ABS *Record* by the notation ✠ **A1 (TAM-PL) (Manual)**. This notation assumes continuous attention of a TA operator.

The symbol "✠" (Maltese-Cross) signifies that the system was built, installed and commissioned to the satisfaction of the Bureau Surveyors. TAM systems (with pre-laid mooring components and accessories) that have not been built under ABS survey, but which are submitted for Classification, will be subjected to special consideration. Where found satisfactory and thereafter approved by the Committee, it will be classed and distinguished in the *Record* by the notation described above, but the symbol "✠" signifying survey during construction will be omitted.

9 Definitions *(1 June 2016)*

Position (pre-laid) mooring system. Position (pre-laid) mooring system is defined as a position mooring system without the complete set of mooring equipment, anchors, chains or wire rope being carried onboard the unit. Typically mooring equipment and components carried onboard a unit designed for position (pre-laid) mooring will be the winches/windlasses and top chain or wire rope.

Pre-laid mooring. Pre-laid mooring is defined as mooring components and accessories other than those carried onboard the unit. It typically consists of anchors, piles, chain, cable, buoys and other appurtenances that are installed at the offshore location in advance of the arrival of the unit to assist in its stationkeeping.

Thrusters. Thrusters are devices capable of delivering side thrust or thrusts through 360º to improve the vessel's maneuverability, particularly in confined waters. For more details, refer to 4-3-5/1.5 of the ABS *Rules for Building and Classing Steel Vessels (Steel Vessel Rules).*

Thrust Assist (TA) System. Thrust assist system is a hydro-dynamic system which utilizes thrusters and dynamic positioning capability to assist the mooring system in controlling or maintaining the position and heading of the vessel by centralized manual control or by automatic response to the variations of the environmental conditions within the specified limits.

TAM (pre-laid) System. Position (pre-laid) mooring system integrated with TA system.

Specified Maximum Environmental Conditions. The specified maximum environmental conditions are the specified wind speed, current and wave height under which the unit is designed to carry out intended operations.

11 Plans and Particulars to be Submitted *(1 June 2016)*

11.1 For (P-PL) Symbol

For the **(P-PL)** symbol, the following plans are to be submitted to ABS:

- Arrangement and complete details of the mooring components and equipment that are carried onboard the unit including their foundations and attachments to the unit
- A sample mooring analysis describing method of load calculations and analysis of dynamic system to determine the mooring line design loads, assumed mooring system configuration including arrangement of pre-laid mooring components and accessories
- Specifications and calculations for the mooring components and equipment that are carried onboard the unit
- Operations Manual which should clearly distinguish the mooring components and equipment that are classed under ABS from pre-laid mooring components that are assumed at the offshore location.

11.3 For TAM-PL and TAM-PL (Manual) Notations

For the **TAM-PL** and **TAM-PL (Manual)** notations, the following plans are to be submitted to ABS:

- General arrangements of the thruster(s) installation, its location of installation, together with its supporting auxiliary machinery systems, fuel oil tanks, foundations, watertight boundary fittings, etc.
- The rated power/rpm and the rated thrust are to be indicated. For azimuthal thrusters, the mechanical and control systems for rotating the thruster assembly or for positioning the direction of thrust are to be submitted. Thruster specifications and calculations for thruster forces and power to counteract environmental forces are to be submitted. In addition, plans of each component and of the systems associated with the thruster are to be submitted. Arrangement and complete details of the mooring components and equipment that are carried onboard the unit including their foundations and attachments to the unit
- A sample mooring analysis describing method of load calculations and analysis of dynamic system to determine the mooring line design loads, assumed mooring system configuration including arrangement of pre-laid mooring components and accessories
- Specifications and calculations for the mooring components and equipment that are carried onboard the unit
- Operations Manual which should clearly distinguish the mooring components and equipment that are classed under ABS from pre-laid mooring components that are assumed at the offshore location.

13 References *(1 June 2016)*

The following Rules, Guides, Codes and Standards are referenced in this Guide:

- ABS *Rules for Building and Classing Mobile Offshore Drilling Units (MODU Rules)*
- ABS *Guide for the Certification of Offshore Mooring Chain*
- ABS *Guidance Notes on the Application of Fiber Ropes for Offshore Mooring*
- ABS *Guide for the Classification Notation Thruster-Assisted Mooring (TAM, TAM-R, TAM (Manual)) for Mobile Mooring Systems*
- API RP 2SK *Design and Analysis of Stationkeeping Systems for Floating Structures*
- API Spec 9A *Specification for Wire Rope*

SECTION 2 Technical Requirements for Symbol (P-PL)

1 General

Units provided with position (pre-laid) mooring systems, in accordance with this Section, will be designated in the *Record* by the optional classification symbol **(P-PL)**.

3 Anchoring Systems

In general, the design of the anchoring system is to comply with the requirements of 3-4-A1/3 of the *MODU Rules*.

5 Equipment

The winches and windlasses are to comply with the requirements of 3-4-A1/5.1 of the *MODU Rules*.

Fairleads and sheaves are to be designed to prevent excessive bending and wear of the anchor lines. The attachments to the hull or structure are to be capable of withstanding the stresses imposed when an anchor line is loaded to its rated breaking strength.

7 Anchor Lines

In general, the anchor lines are to comply with the requirements of 3-4-A1/7 of the *MODU Rules.*

9 Anchors *(1 June 2016)*

The design holding power of the anchors and pre-laid chains are to be submitted.

11 Surveys

See Section 3 of this Guide for survey requirements.

13 Control Station

The control station is to comply with the requirements of 3-4-A1/13 of the *MODU Rules.*

SECTION 3 Survey Requirements for Symbols (P-PL) and (M-PL)

1 Surveys During Construction

Where optional ABS symbols **(P-PL)** or **(M-PL)** are requested, the position (pre-laid) mooring systems and equipment that is being carried onboard the unit is to undergo trials to demonstrate its capability, as applicable.

1.1 Anchoring/Mooring System Foundations

Although the mooring system is an optional scope of classification, a unit's hull back-up structure/foundations are required to be surveyed in compliance with ABS approved drawings, in the presence of and to the satisfaction of the attending Surveyor. Surveys are to be in accordance with 7-1-9/15.1 of the *MODU Rules*, except that a mooring trial is not required.

1.3 Anchor Winch/Windlass Trials

Each anchor winch/windlass is to be tested in accordance with 7-1-9/15.3 of the *MODU Rules.*

1.5 Mooring Equipment and Systems

All mooring equipment associated with class symbols **(P-PL)** and **(M-PL)** that is carried onboard the unit is to be fabricated and certified by ABS at the respective manufacturer's facility.

In general, the mooring equipment and systems that are carried onboard the unit are to comply with the requirements of Appendix 7-1-A1 of the *MODU Rules*, as applicable

Survey of the pre-laid mooring is not required during fabrication or installation.

3 Surveys After Construction

At Special Periodical Survey – Hull No.1, attachments of anchor cable fairleads, and anchor windlasses are to be examined, and the chain, and cables and their respective handling means that are onboard the unit are to be examined. Subsequent Special Periodical Surveys are to be in accordance with 7-2-5/3 of the *MODU Rules*.

Survey of the pre-laid mooring is not required.

SECTION 4 Technical Requirements for Notations TAM-PL and TAM-PL (Manual) *(1 June 2016)*

1 General

Units provided with TAM (pre-laid) systems, in accordance with this Section, will be designated in the *Record* by the optional classification notation **TAM-PL** or **TAM-PL (Manual)**.

3 Thruster-Assisted Mooring (TAM) System

In general, the design of the TAM system including TAM analysis, thrust capacity and systems requirements are to comply with the requirements of Section 2 of ABS *Guide for the Classification Notation Thruster-Assisted Mooring (TAM, TAM-R, TAM (Manual)) for Mobile Mooring Systems*, as applicable.

5 Anchoring Systems

In general, the design of the anchoring system is to comply with the requirements of 3-4-A1/3 of the *MODU Rules*.

7 Equipment

The winches and windlasses are to comply with the requirements of 3-4-A1/5.1 of the *MODU Rules*.

Fairleads and sheaves are to be designed to prevent excessive bending and wear of the anchor lines. The attachments to the hull or structure are to be capable of withstanding the stresses imposed when an anchor line is loaded to its rated breaking strength.

9 Anchor Lines

In general, the anchor lines are to comply with the requirements of 3-4-A1/7 of the *MODU Rules*.

11 Anchors

The design holding power of the anchors and pre-laid chains are to be submitted.

13 Surveys

See Section 5 of this Guide for Survey requirements.

15 Control Station

The control station is to comply with the requirements of 3-4-A1/13 of the *MODU Rules*.

SECTION 5 Survey Requirements for Notations TAM-PL and TAM-PL (Manual) *(1 June 2016)*

1 Surveys During Construction

Where the optional classification notation **TAM-PL** or **TAM-PL (Manual)** is requested, the TAM (pre-laid) system and equipment that is being carried onboard the unit is to undergo trials to demonstrate its capability, as applicable.

1.1 Thrusters and Associated Equipment

Thrusters and associated equipment are to be inspected, tested and certified by ABS in accordance with the requirements in Section 3 of ABS *Guide for the Classification Notation Thruster-Assisted Mooring (TAM, TAM-R, TAM (Manual)) for Mobile Mooring Systems*, as applicable.

1.3 Control and Monitoring System Equipment

Control and monitoring (alarms and instrumentation) system equipment used in a TA system are to be inspected, tested and certified by ABS in accordance with the requirements in Section 3 of ABS *Guide for the Classification Notation Thruster-Assisted Mooring (TAM, TAM-R, TAM (Manual)) for Mobile Mooring Systems*, as applicable.

1.5 Anchoring/Mooring System Foundations

Although the mooring system is an optional scope of classification, a unit's hull back-up structure/foundations are required to be surveyed in compliance with ABS approved drawings, in the presence of and to the satisfaction of the attending surveyor. Surveys are to be in accordance with 7-1-9/15.1 of the *MODU Rules*, except that a mooring trial is not required.

1.7 Anchor Winch/Windlass Trials

Each anchor winch/windlass is to be tested in accordance with 7-1-9/15.3 of the *MODU Rules*.

1.9 Mooring Equipment and Systems

All mooring equipment associated with classification notation **TAM-PL** or **TAM-PL (Manual)** that are carried onboard the unit are to be fabricated and certified by ABS at the respective manufacturer's facility.

In general, the mooring equipment and systems that are carried onboard the unit are to comply with the requirements of Appendix 7-1-A1 of the *MODU Rules*, as applicable

Survey of the pre-laid mooring is not required during fabrication or installation.

3 Surveys After Construction

Where the unit maintains the optional classification notation **TAM-PL** or **TAM-PL (Manual)**, the TAM system including thrusters, TA system and position mooring system are to be surveyed in accordance with the requirements in Section 3 of ABS *Guide for Thruster-Assisted Mooring (TAM, TAM (Manual)) for Mobile Mooring Systems* as applicable.

At Special Periodical Survey – Hull No.1, attachments of anchor cable fairleads, and anchor windlasses are to be examined, and the chain, and cables and their respective handling means that are onboard the unit are to be examined. Subsequent Special Periodical Surveys are to be in accordance with 7-2-5/3 of the *MODU Rules*.

Survey of the pre-laid mooring is not required.