



DEVIATION REQUEST FORM

PUBLICATION DATE **14.1.2021**

Version **4.0**

A. To be completed by Gold Standard

1 | Decision

1.1 | Date – 22/08/2024

1.2 | Decision

The deviation request is rejected as requested however TAC has proposed an alternative approach as summarised below,

- under the condition that a speed trial is conducted for at least one ship per category included in the VPA, the other ships may be exempted from speed trails as required by the methodology.
- the developer shall establish the ship categories using an appropriate criteria, such as IMO categorisation or other that ensure the representativeness of the ships considered similar.
- This approval is limited to ships currently listed in the deviation request and does not extend to planned or future additions.

Further, TAC recommended that the proposed approach may be considered for broader application subject to a methodology revision review and approval. The

project developer is requested to submit a methodology revision for alternative methods for speed trials. This proposal should define conditions and criteria for potentially using alternative methods for speed trials. Additionally, the proposal must ensure that these alternative measures maintain conservativeness and accuracy in quantifying emission reductions

The project developer shall note the following:

- a. It shall be ensured that any future speed trial data used for validation is consistent and replicable, accurately reflecting the SGDL model's post-retrofit performance.
- b. If there is variation between the model predictions and speed trial data exceed a 10% threshold applied to other ships of same category, the project developer is required to adjust the emissions accordingly, ensuring conservativeness in overall emission quantification.
- c. If discrepancies are discovered in future assessment for similar ships, the project developer shall may necessary adjustments to issued emission reductions from the subsequent issuance to maintain overall accuracy and integrity of issued GSVERs to the project/VPAs.

The validating and verifying VVBs shall ensure, based on the methods at their disposal, that the project is in compliance with the above-mentioned.

1.3 | Is this decision applicable to other project activities under similar circumstances?

No

B. To be completed by the Project Developer/Coordinating and Managing Entity and/or VVB requesting deviation (Submit deviation request form in Microsoft Word format)

2| Background information

Deviation Reference Number	DEV_763	
Date of decision	22/08/2024	
Precedent (YES/NO)	No	
Precedent details	N/A	
Date of submission	28/05/2024	
Project/PoA/VPA	Project	ID - GSXXXX
	<input type="checkbox"/> PoA	ID - GSXXXX
	<input checked="" type="checkbox"/> VPA	ID - GS12818, GS12303
Project/PoA/VPA title	GS12303 - GS12070 VPA-2 Marsoft/ClimeCo Energy Efficiency Shipping Retrofits GS12818 - GS12070 VPA-3 Marsoft/ClimeCo Energy Efficiency Shipping Retrofits	
Location of project/PoA/VPA	International	
Scale of the project/PoA/VPA	<input type="checkbox"/> Microscale <input checked="" type="checkbox"/> Small scale <input type="checkbox"/> Large scale	
Gold Standard Impact Registry link of the project/PoA/VPA	https://registry.goldstandard.org/projects/details/4191	
Status of the project/PoA/VPA	<input checked="" type="checkbox"/> New <input checked="" type="checkbox"/> Listed <input type="checkbox"/> Certified design <input type="checkbox"/> Certified project	
Title/subject of deviation	Verifying Post-Retrofit Model Output Utilizing Alternative Methods to Speed Trials	
Specify applicable rule/requirements/methodology and version number	Methodology for Retrofit Energy Efficiency Measures in Shipping V2.0	
Specify the monitoring period for which the request is valid (if applicable)	Start date	End date
Submitted by	Contact person name: Greg Cesare Hauke Kite-Powell	
	Email ID:gcesare@climeco.com; hauke.kite-powell@marsoft.com	
	Organisation: ClimeCo Blue LLC, Marsoft Inc.	
	Project participant: Yes <input checked="" type="checkbox"/> NO <input type="checkbox"/>	
Validation and Verification body (VVB opinion shall be included,	Yes <input checked="" type="checkbox"/> NO <input type="checkbox"/>	

<p>where required by the applicable rules/requirements or request is submitted by the VVB).</p>	<p>If yes; VVB name: TUV SUD America Inc. - Ruby Canyon Auditor name: Nina Pinette</p>
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3 | Deviation detail

3.1 | Description of the deviation:

**Guidance* Use the space below to describe the deviation and substantiate the reason for requesting deviation from applicable rules/requirements. Please include all relevant information in support of the request. You are requested to follow the principles for requesting deviations, given in the [Deviation Approval Procedure/ Design Change Requirements](#).*

3.1.1 | Deviation detail (to be completed by Project developer):

Gold Standard Methodology for Retrofit Energy Efficiency Measures in Shipping Version 2.0, Annex 1, Section 3.6 requires the use of speed trial reports to validate the project speed/power curves generated by the Sea Grant Design Laboratory (SGDL) model reflect the post retrofit performance of the ship. The purpose of the reference to a speed trial is for the collection of post retrofit data (specifically, brake horsepower needed to drive the ship at specific speeds and draft conditions).

Shipowners may decide to perform a formal speed trial post retrofit using procedures specified by the International Maritime Organization (IMO) and/or the International Towing Tank Conference (ITTC). However, the performance of a formal speed trial is not a requirement of the IMO regulatory framework for verifying a ship’s energy efficiency performance. As described throughout the remainder of this deviation request, owners are allowed to utilize other methods to verify energy efficiency in accordance with IMO requirements and routinely do so. The IMO requires 3rd party verification of the methods utilized to verify emissions performance. IMO does not prescribe speed trials as the only way to meet the requirements however. Many ship owners utilize alternative methods which are accepted by the IMO to speed trials to validate emissions performance. Owners do not intend to spend additional funds to also perform costly speed trials to verify the same emissions performance since they have already met their regulatory requirements.

The IMO requires that ships document their energy efficiency via a measure known as the Energy Efficiency Existing Ships Index (EEXI). IMO requires owners to submit documentation of each ship's attained EEXI value, based on the ship's fuel consumption, cargo capacity, and operating speed, and verified by a qualified independent third party. EEXI documentation includes the speed of travel achieved by the ship at a specific draft condition (EEXI Draft) and a specific engine power level. This information is also precisely what is necessary to verify the model of the ship in its post retrofit condition for the Gold Standard Methodology.

The documentation required for determination of EEXI does not require a speed trial to be performed on the ship. It allows for alternative methods (including tank test results and numerical calculation results) as the basis of data required for calculation of EEXI

([https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/Air%20pollution/MEPC.334\(76\).pdf](https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/Air%20pollution/MEPC.334(76).pdf)). These alternative methods can likewise provide the speed and power information necessary to verify the post-retrofit model output and confirm the accuracy of the SGDL model post-retrofit speed/power curves.

The project would utilize data on vessel performance consistent with that assembled for the purpose of EEXI compliance reporting, generated in accordance with methods accepted by the IMO and verified by a third party, to validate the post retrofit SGDL model performance.

The CME requests Gold Standard to accept for the purpose of post-retrofit validation of the MIT SGDL model any performance data generated in a manner consistent with IMO requirements for the documentation of a ship's EEXI performance. These performance data must be certified by a third party to be used for SGDL model validation, as they are for IMO EEXI calculations.

This deviation request is applicable to ships included in the VPA GS12818, "[GS12070 VPA-3 Marsoft/ClimeCo Energy Efficiency Shipping Retrofits](#)" and VPA GS12303 "[GS12070 VPA-2 Marsoft/ClimeCo Energy Efficiency Shipping Retrofits](#)". GS12818 is still under development and does not have a finalized list of applicable ships at this time. The applicable ships in VPA GS12303 are listed in the table below:

IMO Number	Name	Shipowner
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TEMPLATE - DEVIATION REQUEST FORM V4.0

9284295	Big Fish	Starbulk SA
9314181	Brook Trout	Prime Tanker Management Inc.
9638173	Cymona Energy	Alassia NewShips Management, Inc
9309485	Cymona Star	Alassia NewShips Management, Inc
9796303	Debbie H	Starbulk SA
9600619	Dona Bibi	Century Bulk Carriers Management Co.
9503988	Equinox Agnandoussa	Equinox Maritime Ltd.
9503990	Equinox Galini	Equinox Maritime Ltd.
9572082	Equinox Orenda	Equinox Maritime Ltd.
9503976	Equinox Star	Equinox Maritime Ltd.
9456939	Flagship Orchid	Prime Tanker Management Inc.
9512484	Flagship Willow	Prime Tanker Management Inc.
9511416	Golden Myrtalia	Golden Ocean Management AS
9407885	GSL Kithira	Global Ship Lease, Inc.
9388948	Jag Aabha	The Great Eastern Shipping Company Limited
9488023	Jag Lara	The Great Eastern Shipping Company Limited
9321952	Jag Prerana	The Great Eastern Shipping Company Limited
9315733	Jag Pushpa	The Great Eastern Shipping Company Limited
9796298	Katie K	Starbulk SA
9314193	Lake Trout	Prime Tanker Management Inc.
9496939	Lanna Naree	Precious Shipping Public Company Limited
9762912	Laoura	Goldenport Shipmanagement Ltd.
9323649	Mayuree Naree	Precious Shipping Public Company Limited
9651553	Mercurial Virgo	Starbulk SA
9354741	Mookda Naree	Precious Shipping Public Company Limited
9274903	Pantagruel	Starbulk SA
9301859	RENA P	Euroseas Ltd.
9406659	Sestrea	Chandris Hellas
9731468	Star Ariadne	Starbulk SA
9756248	Star Laetitia	Starbulk SA
9731470	Star Magnanimus	Starbulk SA
9756224	Star Sienna	Starbulk SA
9254692	Star Triumph	Starbulk SA
9731432	Star Virgo	Starbulk SA
9457294	Tianjin Venture	Wah Kwong Maritime Transport Limited

3.1.2 | VVB opinion (to be completed by VVB, if applicable):

Per the principles for requesting deviations, provided in *Deviation Approval Requirements and Procedures v1.2*, ClimeCo Blue LLC requested a deviation to the Methodology for *Retrofit Energy Efficiency Measures in Shipping v2.0* (Methodology). ClimeCo completed this Deviation Request Form, sufficiently explained the nature of the request, and proposed alternative monitoring methods/sources of information for the project speed/power curves post retrofit that is required to be obtained from the speed trial report under the current version of the Methodology. ClimeCo's proposed alternative method is consistent with IMO requirements for ships to document their energy efficiency via the Energy Efficiency Existing Ships Index (EEXI). Ships may use a speed trial report; however, they are not required to and may use alternative methods instead.

The requested deviation applies to all ships included in VPA GS12303 and GS12818 under the PoA with ID GS12070.

TUV SUD considers the nature and the scope of the deviation to be sufficiently described and substantiated in the request.

3.2 | Assessment of the deviation:

**Guidance* Use the space below to describe how the deviation complies with the requirements, and, where applicable, the accuracy, completeness and conservativeness is ensured. Please include all relevant information in support of the request.*

3.2.1 | Deviation assessment (to be completed by Project developer):

This deviation request complies with the intent of the requirement to validate the modeled project speed/power curves against the post-retrofit performance of the ship. As stated above, there are multiple ways to document the post-retrofit performance of the ship which are compliant with IMO regulations. A speed trial is one way a ship can generate this data. However, there are additional IMO accepted methods including Computational Fluid Dynamics analysis and other empirical evaluations which provide the necessary data for determining EEXI, and can also be used to validate the SGDL model output.

Calculating a ship's attained EEXI requires determining the reference speed (V_{ref}) at which the ship will move in EEXI loading condition (generally, the draft associated with the ship's design deadweight capacity) and with engine power (P_{ME}) at 75% of maximum continuous rating (MCR). P_{ME} for EEXI purposes is 83% of MCR if engine power limitation has been applied, and for ships with diesel electric propulsion. If the project knows engine power and ship speed for a specified loading condition (this can be EEXI loading or other) for the post-retrofit ship, the project can validate the output of the MIT SGDL model as required by the methodology.

IMO guidelines for calculating and verifying EEXI performance permit the use of information from sea trials, model/tank tests, and numerical calculations in determining a ship's speed/power curves and therefore the speed at which a ship will move for a given main engine power level and loading (draft) condition. Specific references to this can be found in:

The IMO's *2021 Guidelines on survey and certification of the attained Energy Efficiency Existing Ship Index (EEXI)*, [Annex 8, Resolution MEPC.334\(76\)](#)¹, paragraph 4.2.2, which states that EEXI Technical File contents should include documentation of the main engine power output (P_{ME}) and reference speed (V_{ref}) for the EEDI condition, supported as available by reference to information from tank tests (4.2.2.7), numerical calculations (4.2.2.8), or a sea trial (4.2.2.9).

¹ [MEPC 76-15-Add.2 - Report Of The Marine...ty-Sixth Session \(Secretariat\) \(2\).pdf \(imo.org\)](#)

- 4.2.2 The EEXI Technical File should be written at least in English. The EEXI Technical File should include, but not be limited to:
- .1 deadweight (DWT) or gross tonnage (GT) for ro-ro passenger ship and cruise passenger ship having non-conventional propulsion;
 - .2 the rated installed power (MCR) of the main and auxiliary engines;
 - .3 the limited installed power (MCR_{lim}) in cases where the overridable Shaft / Engine Power Limitation system is installed;
 - .4 the ship speed (V_{ref});
 - .5 the approximate ship speed ($V_{ref,app}$) for pre-EEDI ships in cases where the speed-power curve is not available, as specified in paragraph 2.2.3.5 of the EEXI Calculation Guidelines;
 - .6 an approved speed-power curve under the EEDI condition as specified in paragraph 2.2 of the EEDI Calculation Guidelines, which is described in the EEDI Technical File, in cases where regulation 22 of MARPOL Annex VI (Attained EEDI) is applied;
 - .7 an estimated speed-power curve under the EEDI condition, or under a different load draught to be calibrated to the EEDI condition, obtained from tank test and/or numerical calculations, if available;
 - .8 estimation process and methodology of the power curves, as necessary, including documentation on consistency with the defined quality standards (e.g. ITTC 7.5-03-01-02 and ITTC 7.5-03-01-04 in their latest revisions) and the verification of the numerical set-up with parent hull or the reference set of comparable ships in case of using numerical calculations;
 - .9 a sea trial report including sea trial results, which may have been calibrated by the tank test, under the sea condition as specified in paragraph 2.2.2 of the EEDI Calculation Guidelines, if available;
 - .10 calculation process of $V_{ref,app}$ for pre-EEDI ships in cases where the speed-power curve is not available, as specified in paragraph 2.2.3.5 of the EEXI Calculation Guidelines;
 - .11 type of fuel;

Figure 1: Guidelines on survey and certification of the attained Energy Efficiency Existing Ship Index (EEXI), Annex 8, Resolution MEPC.334(76), Paragraph 4.2.2

- .12 the specific fuel consumption (*SFC*) of the main and auxiliary engines, as specified in paragraph 2.2.3 of the EEXI Calculation Guidelines;
- .13 the electric power table² for certain ship types, as necessary, as defined in the EEDI Calculation Guidelines;
- .14 the documented record of annual average figure of the auxiliary engine load at sea obtained prior to the date of application for a survey for verification of the ship's EEXI, as specified in paragraph 2.2.2.3 of the EEXI Calculation Guidelines, if applicable;
- .15 calculation process of $P_{AE,app}$, as specified in paragraph 2.2.2.3 of the EEXI Calculation Guidelines, if applicable;
- .16 principal particulars, ship type and the relevant information to classify the ship as such a ship type, classification notations and an overview of the propulsion system and electricity supply system on board;
- .17 description of energy saving equipment, if available;
- .18 calculated value of the attained EEXI, including the calculation summary, which should contain, at a minimum, each value of the calculation parameters and the calculation process used to determine the attained EEXI; and

Figure 2: Guidelines on survey and certification of the attained Energy Efficiency Existing Ship Index (EEXI), Annex 8, Resolution MEPC.334(76), Paragraph 4.2.2 (cont.)

- 4.2.7 In cases where the sea trial report as specified in paragraph 4.2.2.9 is submitted, the verifier should request further information from the submitter to confirm that:
- .1 the sea trial was conducted in accordance with the conditions specified in paragraphs 4.3.3, 4.3.4 and 4.3.7 of the EEDI Survey and Certification Guidelines, as applicable;
 - .2 sea conditions were measured in accordance with ISO 15016:2002 or the equivalent if satisfactory and acceptable to the verifier;
 - .3 ship speed was measured in accordance with ISO 15016:2002 or the equivalent if satisfactory and acceptable to the verifier; and
 - .4 the measured ship speed was calibrated, if necessary, by taking into account the effects of wind, tide, waves, shallow water and displacement in accordance with ISO 15016:2002 or the equivalent which may be acceptable provided that the concept of the method is transparent for the verifier and publicly available/accessible.
- 4.2.8 The estimated speed-power curve obtained from the tank test and/or numerical calculations and/or the sea trial results calibrated by the tank test should be reviewed on the basis of the relevant documents in accordance with the EEDI Survey and Certification Guidelines, the defined quality standards (e.g. ITTC 7.5-03-01-02 and ITTC 7.5-03-01-04 in their latest revisions) and the verification of the numerical set-up with parent hull or the reference set of comparable ships.
- 4.2.9 In cases where the overridable Shaft / Engine Power Limitation system is installed, the verifier should confirm that the system is appropriately installed and sealed in accordance with the *2021 Guidelines on the Shaft / Engine Power Limitation system to comply with the EEXI requirements and use of a power reserve* (resolution MEPC.335(76)) and that a verified Onboard Management Manual (OMM) for overridable Shaft / Engine Power Limitation is on board the ship.

Figure 3: 2021 Guidelines on survey and certification of the attained Energy Efficiency Existing Ship Index (EEXI), Annex 8, Resolution MEPC.334(76), Paragraphs 4.2.7, 4.2.8, 4.2.9

The IMO's 2021 *Guidelines on the method of calculation of the attained Energy Efficiency Existing Ship Index (EEXI)*, [Annex 7, Resolution MEPC.333\(76\)](#)², paragraph 2.2.3.6, states that a ship's V_{ref} after installation of energy saving measures may be determined by sea trials, model tests, and/or numerical calculations.

2.2.3.6 Notwithstanding the above, in cases where the energy saving device¹ is installed, the effect of the device may be reflected in the ship speed V_{ref} with the approval of the verifier, based on the following methods in accordance with defined quality and technical standards:

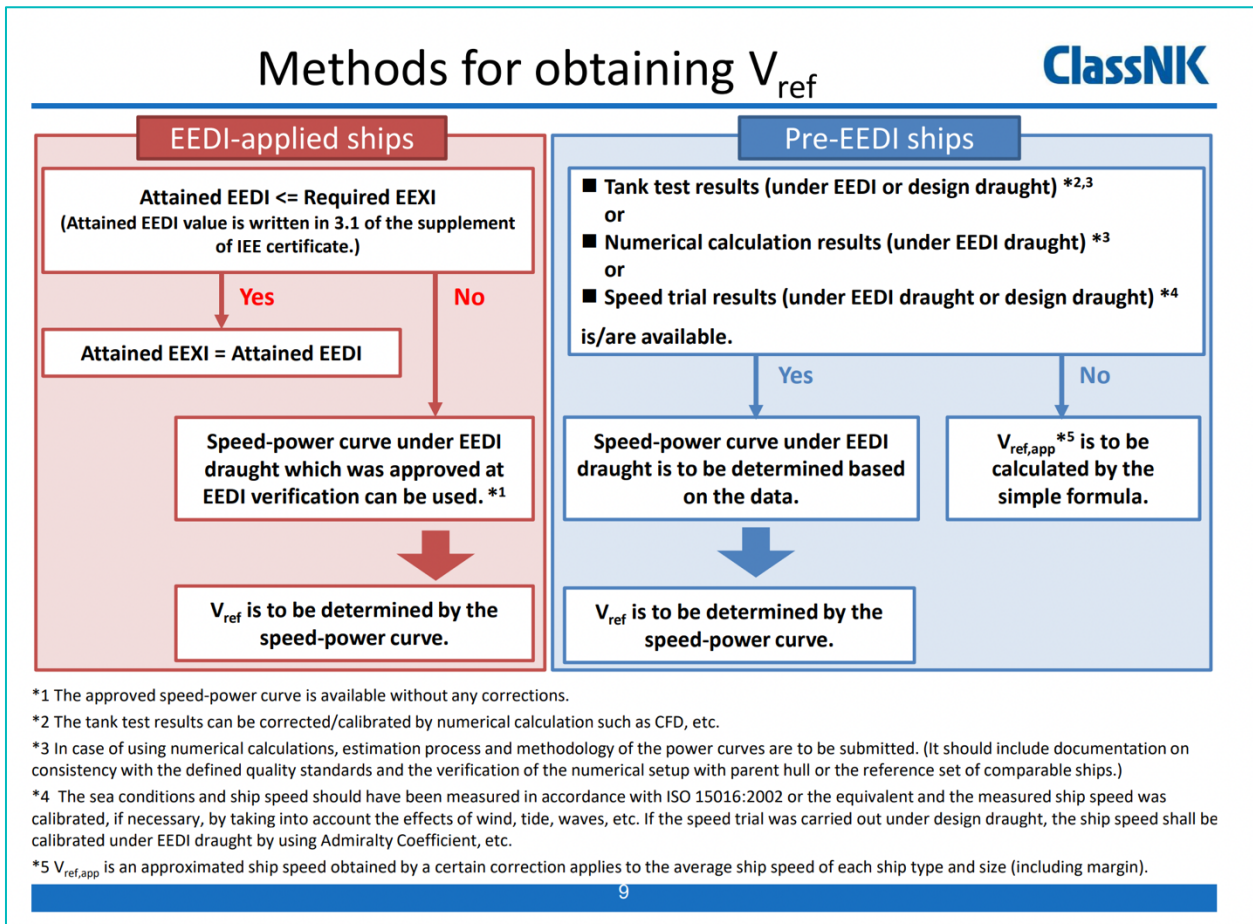
- .1 sea trials after installation of the device; and/or
- .2 dedicated model tests; and/or
- .3 numerical calculations.

Figure 4: 2021 Guidelines on the method of calculation of the attained Energy Efficiency Existing Ship Index (EEXI), Annex 7, Resolution MEPC.333(76), Paragraph 2.2.3.6

² [https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/Air%20pollution/MEPC.333\(76\).pdf](https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/Air%20pollution/MEPC.333(76).pdf)

EEXI is reviewed and verified by an independent third party. Utilizing documentation acceptable for the determination of EEXI as the basis for validating project speed/power curves and post retrofit model output allows for consistent reporting with other programs and provides the necessary data for accurate modeling.

Numerous classification society documents describe EEXI procedures, including this example from Nippon Kaiji Kyokai (Class NK), [Outlines of EEXI regulation \(2021\)](#):



*1 The approved speed-power curve is available without any corrections.

*2 The tank test results can be corrected/calibrated by numerical calculation such as CFD, etc.

*3 In case of using numerical calculations, estimation process and methodology of the power curves are to be submitted. (It should include documentation on consistency with the defined quality standards and the verification of the numerical setup with parent hull or the reference set of comparable ships.)

*4 The sea conditions and ship speed should have been measured in accordance with ISO 15016:2002 or the equivalent and the measured ship speed was calibrated, if necessary, by taking into account the effects of wind, tide, waves, etc. If the speed trial was carried out under design draught, the ship speed shall be calibrated under EEDI draught by using Admiralty Coefficient, etc.

*5 $V_{ref,app}$ is an approximated ship speed obtained by a certain correction applies to the average ship speed of each ship type and size (including margin).

Figure 5: Nippon Kaiji Kyokai (Class NK) Description of EEXI Regulation

Finally, further cross-checking of actual reported fuel consumption against the SGDL model output is still required by the Methodology Annex Section 4.2. Shipowners must measure and document actual fuel consumption in accordance with European Union (EU) MRV Regulation 2015/757 and IMO Fuel Oil Data Collection System (Regulation 22A as an amendment to MARPOL). The project fuel consumption determined by the SGDL model is cross-checked against actual fuel consumption reported by the ship, providing further confirmation of the accuracy of the post retrofit SGDL model.

3.2.2 | VVB opinion (to be completed by VVB, if applicable):

TUV SUD considers ClimeCo's deviation request to use alternative sources of information—in place of the speed test—to determine the project speed/power curves of the ship post retrofit to be equally as accurate and complete as the speed test method which is currently required by the Methodology. These proposed alternatives are consistent with IMO requirements and are verified by an independent third party. Conservativeness is not relevant to this deviation request because the speed/power curves will result in equal accuracy of GHG emission reductions; the application of conservative assumptions or discount factors is unnecessary. GHG emission reductions will not be overestimated as a result of the deviation.

3.3 | Impact of the deviation:

**Guidance* Use the space below to describe the impact of the deviation on project design, safeguarding principles assessment, SDG assessment, emissions reductions, monitoring frequency, data quality, potential risk or any other relevant aspect of the project. Please substantiate the impact assessment with relevant and verifiable data/information.*

3.3.1 | Impact assessment (to be completed by Project developer):

Methods acceptable to the IMO which provide the necessary data for validation of accurate post retrofit modeling are an appropriate source of data for the purposes of validating the post-retrofit SGDL model described in Annex 1 of the methodology. Inputs to the modeling and the verification of the post-retrofit model against fuel consumption remain the same with the proposed deviation. Furthermore, post-retrofit ship modeling is still compared to a third-party verified document describing the ship's energy efficiency performance. This means that there are no changes to the design, impact, or effectiveness of the methodology if additional, third-party verified documents are used to compare against the output of the MIT SGDL model.

All data inputs required by Annex 1 SGDL modeling approach are unchanged. There are no changes to the ship particulars, the model itself, or any of the static values listed in the methodology. There are also no changes to the monitoring data collected as part of the project such as hours underway, speed, draft, Beaufort scale, and fuel consumption. Further, there are no changes to any of the parameters listed in the main body or the MIT SGDL section of the methodology.

Because the post-retrofit performance data are also verified by a third party, as with EEXI documentation, there is no loss in data quality as a result of the requested deviation. Furthermore, it does not change the monitoring frequency of the project.

Finally, because the model output is checked against the real fuel consumption of the ship for the period and the proposed alternative data sources are also third-party verified, there are no material changes to the monitoring or calculation of emissions reductions as a result of this deviation request.

3.3.2 | VVB opinion (to be completed by VVB, if applicable):

TUV SUD reviewed the details of the deviation request and verified that deviation has no impact on project design, safeguarding principles assessment, SDG assessment, emissions reductions, monitoring frequency, or data quality. Furthermore, the deviation poses no potential risks to any other aspect of the project.

3.4 | Documents:

**Guidance* List of documents provided (note that once a decision has been made by Gold Standard, this deviation form along with supporting documents will be made public on the Gold Standard website. If any of the supporting documents are confidential, please indicate here to ensure they are omitted.)*