Consultation Feedback Report – Amendments to National Standard for Commercial Vessels – Part C, Subsection 5A - Machinery

Outline

The Australian Maritime Safety Authority (AMSA) has amended the *National Standard for Commercial Vessels – Part C, Subsection 5A – Machinery* (NSCV Part C5A) to:

(a) provide a nationally consistent standard for the use of in-board petrol engines on vessels that are less than 7.5 metres long where the power of the engine is less than or equal to 320kw;
(b) align the standard for the length, thickness and securing of a vessel's tiller and quadrant boss with Lloyds Register Class Rules; and
(c) move the published machinery related generic equivalent solutions (GES) into NSCV Part C5A.

The revised standard has now been made and is available on the AMSA website (the superseded standard is also still available of the AMSA website). These revised standard will commence on 1 January 2018.

Consultation Feedback

Consultation on the proposed amendments to NSCV Part C5A was conducted over four (4) weeks and closed on 16 August 2017.

Feedback was sought from the general public and key stakeholders including the:

- Domestic Commercial Vessel Advisory Committee;
- Fishing Industry Advisory Committee; and
- Maritime Agencies Forum.

AMSA received 27 submissions in response to the proposed amendments. These comments and AMSA's responses and subsequent amendments to NSCV Part C5A are set out in Table 1 below.

Table 1 – NSCV Part C5A consultation submissions and responses

Comment No.	Provision	Industry Comment / Submission	Response to submission
1	3.10.2	Note 2 - remove reference to USL Code so it can be retired.	Thank you for your submission. Table 14.1.a from Section 9 of the USL Code (1993) has been included in clause 3.10.2 note 2 and the reference to the USL Code has been removed.

Comment No.	Provision	Industry Comment / Submission	Response to submission
2	3.10.5	formula should be fi not fp	Thank you for your submission. The formula has been corrected.
3	3.13.1	fix figure 8 so it prints properly	Thank you for your submission. Unfortunately, we have been unable to replicate any errors in printing Figure 8. This may be a software or printer issue.
4	4.9.4	define "heavy gauge"	Thank you for your submission. To provide clarity, the words "seamless, heavy gauge metal" will be amended to "seamless metal tube or pipe suitable for the system pressure and environment".
5	6.9.2.3	the formula for rudder side plating gives negative plate thickness for small rudders, this should be remedied	Thank you for your submission. Your comments are related to content in the standard that is outside the scope of this review. However, your submission has been captured for a future more in-depth review of NSCV Part C5A.
6	2.14.3.1	With regard to the proposed revisions Part 5A (Machinery), I am rather concerned, since I have been waiting for these updates to suit a project I have been developing. I had discussed this vessel briefly with Chris Barber at the workshop in Brisbane a few months ago. Granted, I would not have mentioned twin engine/catamaran/waterjet etc, due to commercial confidence at the time. Our project is 6metre class 2C rescue/multirole vessel design powered by waterjet. It is of catamaran form, and thus twin engine. Each engine is to be contained within its own hull/space with its own fuel system. This arrangement does not fall within the scope of the new proposed standard as the title immediately prohibits twin engine vessels. Our total power is less than the limit of 320 kW. Petrol engines in this instance, are advantageous due to the lighter weight and smaller size. The diesel engine option we are considering, has much reduced power, and is so large and heavy that it can barely fit in place. Diesel is also more expensive. I would request	Thank you for your submission. Clause 2.14.3.1 has been updated to allow multiple in-board petrol engines so long as each engine does not occupy the same space and to clarify that the total power of installed engines does not exceed 320 kW.

Comment No.	Provision	Industry Comment / Submission	Response to submission
		that review be given, to widen the scope of the standard, to allow this vessel to fit within the envelope of the standard. Our vessel fitted with twin engine spaces and separate fuel systems, does not I believe significantly offer greater risk than a single engine installation. The risk of any one engine space having an incident should be the same for all options.	
7	2.14 general petrol inboards	Inclusion of ABYC as an equivalent set suite of standards for petrol inboard installations. The ABYC is a comparable equivalent to the ISO standards and is the primary standard for the majority of imported petrol ski boats	Thank you for your submission. Whilst vessels from the USA may be built to the ABYC it is our understanding that NMMA (USA) builders are currently already routinely building and certifying their vessels in accordance with ISO and the European Craft Directive for export purposes. To date the vast majority of applications to the National Regulator for inboard petrol engines have been based on ISO standards. There has not been significant industry requests for recognition of ABYC/NMMA standards as they are readily able to be certified in accordance with ISO standards. Similarly, the proposed in-board petrol engines clauses (& standards that apply) in this amendment are consistent with those that have recently been adopted in NSCV Part F2 – Leisure craft for Class 4 vessels.
8	2.14.1.(note (e)) - fly by wire	The requirement for two wire system for electrical components is now becoming fast redundant with "fly by wire" and other Wi-Fi and digital signalling systems. Suggest the current requirements are dated.	Thank you for your submission. Your comments are related to content in the standard that is outside the scope of this review. However, your submission has been captured for a future more in-depth review of NSCV Part C5A.

Comment No.	Provision	Industry Comment / Submission	Response to submission
9	2.14.3.3 stds petrol inboards	As many commercial petrol inboard vessel originate from the USA, the compliance regime is the ABYC. To post build apply the ISO standards to ABYC fuel system compliant vessels would be difficult to say the least and may lead to a less safe outcome. Would strongly recommend provisions are made for the acceptance of equivalent ABYC standards. e.g. ABYC H-24 gasoline fuel systems and the other linked standards for petrol inboard regulations.	Thank you for your submission. Whilst vessels from the USA may be built to the ABYC it is our understanding that NMMA (USA) builders are currently already routinely building and certifying their vessels in accordance with ISO and the European Craft Directive for export purposes. To date the vast majority of applications to the National Regulator for inboard petrol engines have been based on ISO standards. There has not been significant industry requests for recognition of ABYC/NMMA standards as they are readily able to be certified in accordance with ISO standards. Similarly, the proposed in-board petrol engines clauses (& standards that apply) in this amendment are consistent with those that have recently been adopted in NSCV Part F2 – Leisure craft for Class 4 vessels.
10	2.14.3.9 additional requirements	The additional requirements listed here are repeated or additional requirements as detailed in the ABYC and ISO standards that cover petrol inboards for example the requirement for metal sheath braided fuel lines (ISO permit non braided fire fuel hose meeting the 2.5 minute fire rating). Would recommend that we do not deviate from the ISO and ABYC standards unless there is an overwhelming safety case for these additional requirements. The listed requirements for intrinsic electrical safety "boots" etc. is adequately covered and dealt with in the ABYC and ISO standards, cannot see the benefit of listing as an additional requirement as electrical components are covered in part 2.14.3.4.	Thank you for your submission. The proposed in-board petrol engines clauses in this amendment are consistent with those that have recently been adopted in *NSCV Part F2 – Leisure craft* for Class 4 vessels. As the inclusion of in-board petrol engines in the standard is new (up until now they have been prohibited for commercial use), it was felt that the standard should err on the side of caution in terms of safety initially and if over time a safety case is proven, then relaxation of some of the

Comment No.	Provision	Industry Comment / Submission	Response to submission
			constraints may be considered. Whilst the standard intends to adopt the relevant ISO Standards for inboard petrol engines, it was also considered prudent to add some additional safety measures be included for commercial vessels to align with the requirements for other engine types already covered by the NSCV Part C5A.
11	2.14.4.2 additional outboard	Performance parameters required for a suitable time duration for return to port, the application of this clause in its present form leads to the fitting of auxiliaries by the operators that are underpowered for the only purpose of meeting the NSCV requirement for 2 outboards. They tend to be stowed on-board in many cases, and it is a difficult argument to convince operators of the safety case in the era of more reliable outboards and better weather forecasting to lessen risk. Suggest further relaxation for outboards to 15Nm or as an alternative two hours as a minimum in line with other safety timeframes found within the NSCV.	Thank you for your submission. This clause will be updated to require that the second engine is permanently attached to the transom. The note will also be updated to clarify that operational risks should be considered when determining the size of the second engine.
12	2.19 Exhaust Systems	Would suggest this section is cumbersome, a bit dated and over prescriptive and would recommend moving to the class approach. Issues with the current approach is that the requirement is based on the vessel length which has no real relevance on the primary risk of flooding the space and also the requirements (the deemed to satisfy) do not recognise changing risk profiles, for example between as class B vessel (potentially in a big sea along way from port to a class E vessel with small wave height and close to refuge). A better approach would be for a set of requirements for class D/E vessels and one for class A/B/C vessels using the class approach by a set of required outcomes. "Engine exhaust outlets which penetrate the hull below the freeboard deck should be provided with means to prevent back flooding into the hull through a damaged exhaust system. For vessels operating on unrestricted service a positive means of closure	Thank you for your submission. This table was only updated to include the content from the published generic equivalent solution. However, your submission has been captured for a future more in-depth review of NSCV Part C5A.

Comment No.	Provision	Industry Comment / Submission	Response to submission
		should be provided. The system should be of equivalent construction to the hull on the outboard side of the closure. For Short Range Yachts, where the fitting of a positive closure is not practicable, the exhaust should be looped up above the waterline on the outboard side of the system, to a minimum height of 1000mm, and be of equivalent construction to the hull". Class rules also introduce the use of diffusers and other bypass arrangements to prevent back flooding over the use of the older traditional flaps that tend to require a lot of maintenance. NSW's experience over some time with the proposed new arrangements find the requirement for both a water flow meter and exhaust pyrometer to be duplicating. The fitting of an exhaust pyrometer is to detect elevated temperatures as a result of the failure of water flow.	
13	2.21.2 air inlet and exhaust vent	The minimum area requirements for the area of vents based on kw has been very problematic as it results in very large vents. Suggest we remove this part and leave the requirement for temperature above ambient requirement or use the ISO rules for ventilation.	Thank you for your submission. Your comments are related to content in the standard that is outside the scope of this review. However, your submission has been captured for a future more in-depth review of NSCV Part C5A.
14	2.17.4 alternative starting mean	Recommend a relaxation for class D vessels <7.5m from the requirements to have alternative means of starting as these vessels are low risk, in some cases are pull start only and those with electric start tend to only have room for a single battery to be fitted. Motor reliability and maintenance (SMS) can facilitate for the safety from a single source starting arrangement for D and E waters.	Thank you for your submission. Your comments are related to content in the standard that is outside the scope of this review. However, your submission has been captured for a future more in-depth review of NSCV Part C5A.
15	2.9.3 Separation of exhaust pipe	Would recommend a review of the class rules that permit the fitting of combined exhausts for incorporating in the NSCV.	Thank you for your submission. Your comments are related to content in the standard that is outside the scope of this review. However, your submission has been captured for a future more in-depth review of NSCV Part C5A.
16	3.1 Half Coupling	The USL code previously asked for the coupling to have torsional strength equivalent	Thank you for your submission. Your comments

Comment No.	Provision	Industry Comment / Submission	Response to submission
	Boss Thickness	to that of the shaft. The new NSCV now has a formula which appears to over engineer the coupling. Proposal is to accept the design of the half coupling boss thickness on the basis of the same equivalent torsional strength of the shaft.	are related to content in the standard that is outside the scope of this review. However, your submission has been captured for a future more in-depth review of NSCV Part C5A.
17	3.10 Propeller Shafts	Would suggest consideration to updating the NSCV shafting and associated component requirements to aligning with Lloyds Rules requirements as proposed for other sections of engineering in this chapter for alignment with the Lloyds requirements. The Lloyds shafting rules have been in place for a long period and are a proven set of rules the industry (designers/ builders) requests to use as an equivalent rule set in lieu of the NSCV. Second consideration for the use of the ABYC rules for shafting with the selection of a service factor that matches the Lloyds outcomes. These rules are also a widely used internationally and are commonly within CE Declarations of conformity as the default shafting rules as there is no ISO standards for shafting.	Thank you for your submission. Your comments are related to content in the standard that is outside the scope of this review. However, your submission has been captured for a future more in-depth review of NSCV Part C5A.
18	4.11 Plastic fuel tanks	Suggest fuel systems certified by a notified body are accepted for sailing vessels above 13m as there is little difference in risk factors e.g. engine kilowatt and arrangement between lengths. This will impact primarily on imported yachts and motor boats with no means to retrofit.	Thank you for your submission. Your comments are related to content in the standard that is outside the scope of this review. However, your submission has been captured for a future more in-depth review of NSCV Part C5A.
19	4.7.3.2.1 plastic fuel tanks	Sailing Yachts would fail this requirement as their plastic fuel tanks are fitted to the common space of the engine and accommodation space, suggest some relaxation to this clause in recognition of the now long term in service use of plastic fuel tanks.	Thank you for your submission. This clause was only added so that the content from the published generic equivalent solution could be included in the standard. The requirement for tanks not be installed in spaces containing sources of ignition or installed in spaces of moderate or high fire risk, also aligns with those found in *NSCV Part C4 – Fire Safety.*
20	Table 1	Some of the tables in the standard have lists (a, b, c, ...) and most state whether you need to do	Thank you for your submission. The source error

Comment No.	Provision	Industry Comment / Submission	Response to submission
		all the points (joined with and) or you have to choose one of the points (joined with or) but some of the points don't have either. This is also missing at Clause 5.8.2.7 (b). Also page 7 in table 1 has a source error Clause 4.11 defines vessels less than or equal to 13 m. The national law regularly uses 12 m as a standard size. Making these sizes standard would remove confusion.	in table 1 has been corrected. The tables in the amendment have been updated to provide additional clarity as to whether each clause is a requirement or if they are individual options. Reviewing the cut-off lengths throughout the NSCV are outside the scope of this amendment to NSCV Part C5A. The use of 13m in this table aligns with *NSCV Part C3 - Construction* and provides for the incorporation of an existing approved generic equivalent solution.
21	5.8.3.3 Number of Pumps	On larger vessels where the requirements for bilge pumps is supplemented with the requirement to have two fire pumps, some additional notes are needed under what circumstances and classes where pumps either fire or bilge can be used for combined purposes. i.e. 2 fire and 2 bilge pumps are reduced to a combination of three pumps for bilge and fire similar to what is seen in Tug boat setups.	Thank you for your submission. *NSCV Part C4 – Fire Safety* was amended in 2012 to remove the limitation on the use of fire pumps for other purposes.
22	5.8.3.Table 5 bilge pumping	Would suggest a rethink of the table pump numbers and capacities to align more with the requirements of ISO standards, recognise for D/E waters the risks particularly for non-passenger carriage is low and the configuration of classes of vessels does not lend itself to easily meeting these requirements i.e. punts with outboard propulsion less than 12.5m or sailing yachts >13m. The ability and likelihood of a crew member to be able to operate these high capacity hand pumps 5.5 Kl (that's a lot of water) for an extended period of time is very questionable and in all likelihood the vessel would be abandoned well before these volumes of water were to be encountered. Would recommend better correlation between the required outcomes in 5.5 DRAINING OF SPACES WITHIN THE VESSEL to the deemed to satisfy in Table 5.	Thank you for your submission. Your comments are related to content in the standard that is outside the scope of this review. However, your submission has been captured for a future more in-depth review of NSCV Part C5A.

Comment No.	Provision	Industry Comment / Submission	Response to submission
23	6.11.3 rudder boss	The boss depth is based on the key length that can result in a very large boss depth, suggest the boss depth reverts to the stock diameter as per the previous USL requirement.	Thank you for your submission. The calculations have been updated to reflect that the boss length is 1.3 x upper stock diameter and that key is to extend the full length of the boss.
24	Chapter 6 Rudder Systems	Again the same comments as those applied to shafts, imported motor and sail vessels rudders are to both ISO and ABYC standards that are widely in use and proven. Typically the assessment of these vessels rudder systems to the NSCV is overlooked and the rudder systems accepted. Would suggest the adoption of ABYC, ISO and Lloyds rules to the NSCV as equivalent rule set.	Thank you for your submission. Your comments are related to content in the standard that is outside the scope of this review. However, your submission has been captured for a future more in-depth review of NSCV Part C5A.
25	Clause 4.7.1.2 Pressure Testing	In lieu of the two differing pressure head testing levels that tanks are tested to 2.5m or the alternative ISO and ABYC standards for fuel tanks.	Thank you for your submission. Both of the pressures mentioned in 4.7.1.2 align with the ISO standard and will be retained in the amendment to NSCV Part C5A.
26	Table 1 - Less than 75mm	The draft states "On a Class 1C vessel of any length" etc. This means that the provision applies to Load line length vessels subject to the convention too (as does the rest of this table). Was this the intent? Which requirements prevail?	Thank you for your submission. Clause 2.19.9.5(a) in NSCV Part C5A excludes Load line vessels from the table. However, to avoid confusion the title of the table has been updated to provide further clarity.
27	Tiller boss and Keyway	The keyway sheer area formula does not seem to return a sensible result. Example 23.95m Lobster fishing vessel currently under construction. dU = 68.7mm from new equation As >= 0.25xdU = 17.175mm2. LR formulation for shear area is 0.25 x dU^2. returning a value of 1179mm2	Thank you for your submission. The calculation has been corrected.