



UNIVERSIDADE DA CORUÑA



Escola Politécnica Superior

Trabajo Fin de Grado

CURSO 2021/22

***BUQUE TANKER LNG 140000 m³ Y DISEÑO DE UNA
PLANTA GENERADORA DE POTENCIA CON
TURBINA DE GAS Y CICLO REGENERATIVO***

Número 2122-TFG-73

**Programa de simultaneidad de ingeniería naval y oceánica e
ingeniería mecánica**

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2022

BUQUE TANKER LNG 140000 M3 Y DISEÑO DE UNA PLANTA GENERADORA DE POTENCIA CON TURBINA DE GAS Y CICLO REGENERATIVO. RESUMEN

En primer lugar, se desarrollará el proyecto de un buque tanker LNG. La particularidad de este buque es su carga, ya que requieren unas características muy concretas, debido a su temperatura, presión y flash point.

Una vez completado el proyecto de diseño del tanker de LNG, se desarrollará el diseño de una planta de potencia para la propulsión del buque, que se estima en un mínimo de 25 MW, basada en turbina de gas regenerativa empleando el propio LNG transportado como combustible. Esta turbina de gas regenerativa operará con dos compresores con una etapa de enfriamiento entre ambas compresiones y los gases de escape calientes se emplearán para precalentar el aire comprimido antes de entrar en la cámara de combustión.

En el diseño de esta planta de potencia se dimensionarán tanto en enfriador con agua de mar como del intercambiador gases-aire. Se compararán los resultados obtenidos en función de cómo los parámetros de diseño (relación de compresión, temperatura máxima, caudal de aire...) afecten a la eficiencia térmica de la planta. La comparación con turbina de gas simple y motor diésel se llevará a cabo en términos de eficiencia, coste y emisiones, estableciéndose las posibles ventajas e inconvenientes



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Documento

CUADERNO 4: ARQUITECTURA NAVAL

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REQUISITOS PREVIOS DE OPERACIÓN. RPA

A continuación, se presentarán los requisitos previos iniciales en los que se basará el diseño del buque:

Tipo de buque

Buque Transporte de LNG - 140000 m³

Clasificación y cotas

SOLAS, CIG, Bureau Veritas, MARPOL

Características de la carga

Tanques membrana

Velocidad y autonomía

Velocidad servicio de 17,2 nudos, 85% MCR 10 MM. Autonomía 10.000 millas

Propulsión

Diesel eléctrico

Tripulación y pasaje

28 tripulantes

PARÁMETROS DE FORMA DEL BUQUE

A continuación, se muestra una tabla con los datos del buque que se han ido obteniendo en los cuadernos anteriores:

Parámetro	Valor	Unidad
Displacement	109400	t
Volume (displaced)	106732,163	m ³
Draft Amidships	12,200	m
Immersed depth	12,200	m
WL Length	258,951	m
Beam max extents on WL	41,968	m
Wetted Area	14618,239	m ²
Max sect. area	499,723	m ²
Waterpl. Area	9449,625	m ²
Prismatic coeff. (Cp)	0,825	
Block coeff. (Cb)	0,805	
Max Sect. area coeff. (Cm)	0,976	
Waterpl. area coeff. (Cwp)	0,870	
LCB length	134,761	from zero pt. (+ve fwd) m
LCF length	130,283	from zero pt. (+ve fwd) m
LCB %	52,041	from zero pt. (+ve fwd) % Lwl
LCF %	50,312	from zero pt. (+ve fwd) % Lwl
KB	6,365	m
KG fluid	0,000	m
BMt	11,454	m
BML	395,501	m
GMt corrected	17,820	m
GML	401,866	m
KMt	17,820	m
KML	401,866	m
Immersion (TPc)	96,859	tonne/cm
MTc	1723,417	tonne.m
RM at 1deg = GMt.Disp.sin(1)	34022,836	tonne.m
Length:Beam ratio	6,170	
Beam:Draft ratio	3,440	
Length:Vol ^{0.333} ratio	5,459	
Precision	Medium	64 stations

INTRODUCCIÓN

En el siguiente documento se definirá el compartimentado del buque proyectado, así como la localización y capacidad de cada tanque. A partir de esta información, se estudiarán también las curvas hidrostáticas, las curvas KN que ayudan a comprobar aspectos relacionados con la estabilidad del buque y se definirán las zonas estancas.

El compartimentados del buque se realiza siguiendo los siguientes tres apartados:

- Compartimentado longitudinal
- Compartimentado transversal
- Compartimentado vertical

Además, se en el compartimentado se diferenciarán las siguientes áreas:

- Zona de proa
- Zona de popa
- Zona de máquinas
- Zona de carga

Para la correcta realización del siguiente cuaderno, serán de importancia los siguientes reglamentos: MARPOL, SOLAS y la Sociedad de clasificación Bureau Veritas.

1 ESTRUCTURA LONGITUDINAL

A continuación, se definirá la estructura principal del buque en el sentido longitudinal, es decir, el número y separación entre cuadernas.

En la posición de algunas de esas cuadernas se encontrarán mamparos estancos transversales que se encargan de la subdivisión del volumen interior del buque en el sentido de la eslora. La característica principal de los mamparos estancos es que se extienden desde el fondo hasta la cubierta de francobordo del buque. Existen los siguientes mamparos con estas características:

- Mamparo pique de proa
- Mamparo pique de popa
- Mamparo pañol
- Mamparo cámara de máquinas

En los siguientes apartados se definirán los espacios que delimitan estos mamparos y además se indicará la posición de éstos.

1.1 Clara de cuadernas de trazado

La separación entre cuadernas no será constante a lo largo de toda la eslora del buque ya que existen zonas con una mayor complejidad en las formas, estas son el cuerpo de proa y el de popa.

Además, habrá que tener muy claro donde se encuentran las cuadernas, porque en siguientes apartados, cuando se sitúen los mamparos, éstos deben coincidir con cuadernas.

La sociedad de clasificación indicada en las RPA no hace indicaciones sobre este parámetro, tomaremos como referencia los valores el buque de referencia.

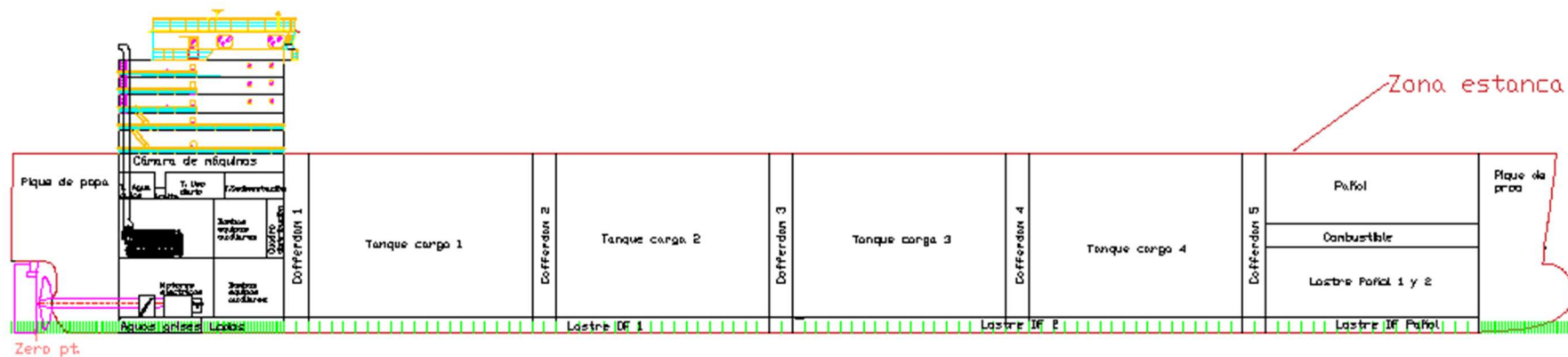
ZONA	SEPARACIÓN ENTRE CUADERNAS
Pique popa	500 mm
Cámara de máquinas	500 mm
Zona de carga	2000 mm
Pañol	2000 mm
Pique proa	500 mm

2 DEFINICIÓN ZONA ESTANCA

Se define como zona estanca de un buque aquella zona que no dispone de aberturas, y en caso de disponerlas contarán con cierres estancos a la intemperie.

La zona estanca del buque proyectado se extiende desde la línea base hasta la cubierta situada a 30 metros.

En el siguiente croquis se observa dicha zona delimitada por una línea roja:



3 PUNTOS DE INUNDACIÓN PROGRESIVA

Los puntos de inundación progresiva son aberturas no estancas a la intemperie que están situadas por encima de la cubierta definida anteriormente.

Estos puntos se caracterizan porque si están sumergidos provocan una inundación progresiva, pero en casos de inmersión transitoria, como por ejemplo un golpe de mar, podrán resistir sin filtrar el agua. Limitan el ángulo de inundación.

Se considerarán como puntos de inundación progresiva los accesos a la superestructura y la ventilación de la cámara de máquinas

4 COMPARTIMENTADO TRANSVERSAL

En el apartado que se muestra a continuación se definirán las distintas zonas del buque, así como la localización de los mamparos estancos y de colisión. Estos mamparos han de coincidir con la localización de cuadernas y deben extenderse desde el fondo hasta la cubierta de francobordo y de babor a estribor.

El volumen interior del buque se divide en:

- Pique de popa
- Pique de proa
- Cámara de máquinas
- Zona de carga

4.1 Zona de proa

Esta zona se extiende desde el extremo de proa del buque hasta el extremo de proa de la zona de carga. Este espacio tiene las siguientes funciones:

- Espacio que protege la carga
- Zona de almacenamiento de lastre
- Zona de almacenaje para herramientas y equipos

4.1.1 Mamparo de colisión. Pique de proa

El reglamento SOLAS indica en el capítulo III:

“Se instalará un mamparo de colisión que será estanco hasta la cubierta de cierre. Este mamparo estará situado a una distancia de la perpendicular de proa no inferior al 5% de L o a 10 m, si esta segunda magnitud es menor, y, salvo cuando la Administración permita otra cosa, dicha distancia no será superior al 8% de L. Cuando cualquier parte del buque que quede debajo de la flotación se prolongue por delante de la perpendicular de proa, como por ejemplo ocurre con una proa de bulbo, las distancias estipuladas en el párrafo 2 se medirán desde un punto situado:

- A mitad de dicha prolongación.
- A una distancia igual al 1,5% de la parte de la eslora del buque que quede por delante de la perpendicular de proa.
- A una distancia de 3 m por delante de la perpendicular de proa.

Tomándose de esas medidas la menor. “

A continuación, se define la eslora que se utilizará, se tomará el valor mayor de los dos que se indican:

1. 96% de la eslora total al 85% el puntal, desde el extremo de roda hasta el extremo del codaste.

$$96\% \text{ de } 264 = 253.44 \text{ m}$$

2. Eslora total al 85% del puntal, desde el extremo de la roda hasta el eje de la mecha del timón.

$$100\% \text{ de } 260.72 \text{ m}$$

Escogiendo la mayor, la eslora que se utilizara en los cálculos se define como:

$$L = 260.72 \text{ m}$$

El mamparo de colisión se sitúa a una distancia mínima del 5% de L o 10 metros, escogiendo la menor, por tanto:

$$\min\{5\% 260.72, 10\ m\} = \min\{13.036, 10\ m\} \rightarrow 10\ metros$$

En el caso del buque proyectado hay que tener en cuenta el bulbo de proa, se considerará la mitad de las siguientes dimensiones:

1. Mitad de la protuberancia:
50% de 6.1 = 3.05 m
2. 1.5% de la eslora.
1.5% L = 3.96 m
3. 3 metros

Escogiendo el valor mínimo de los 3 calculado, y restándosele a la primera posición del mamparo de colisión calculado, resulta:

$$10 - 3 = 7\ m$$

La distancia mínima donde debe estar el mamparo de colisión resulta:

$$d_{MIN} = 260.72 - 7 = 253.72\ m$$

Además, el reglamento indica el máximo, que no puede exceder el 8% de la eslora calculada, repitiendo el cálculo:

$$8\% de L = 21.12\ m$$

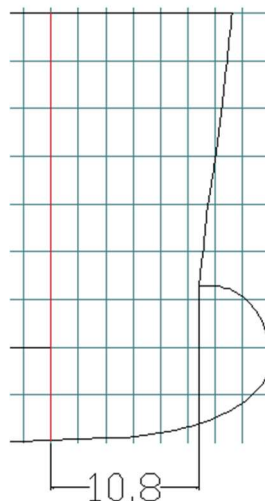
Teniendo en cuenta el bulbo de proa instalado:
21.12 - 3 = 18.12 m

Resultando,

$$d_{MAX} = 260.72 - 18.12 = 242.6\ m$$

Concluyendo, el mamparo de colisión debe situarse entre 253.72 y 242.6 metros, haciéndolo coincidir con una cuaderna:

Mamparo de colisión



Pique de proa

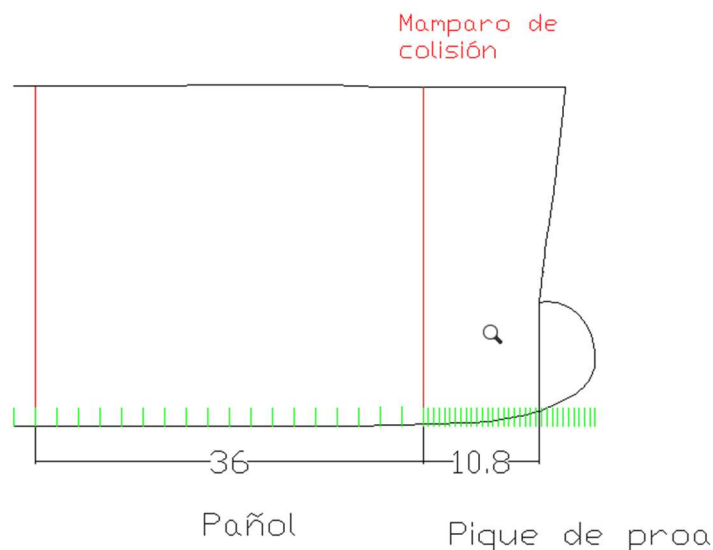
El mamparo se localizará a 10.8 m de la perpendicular de proa, estando dentro del rango establecido (7, 17.86 m), a 244 metros de la perpendicular de popa. Se hará coincidir dicho mamparo con la cuaderna de trazado número 185.

4.1.2 Pañol

Existirá una zona dedicada al almacenaje de herramientas y equipos, además de tener una zona dedicada a agua de lastre y el almacenaje de combustible, ya que debido a la autonomía del buque será necesario almacenar el combustible fuera de la cámara de máquinas ya que son grandes tanques, teniendo después cerca de los motores un tanque de uso diario. Además, cumpliendo con el reglamento MARPOL, no se podrá almacenar este combustible en dobles fondos o dobles cascos.

Este tendrá una longitud de 36 metros, estará delimitado por el mamparo de colisión del pique de proa (Situados en la cuaderna 185) y por un mamparo estanco en la cuaderna 167 que lo separa de la zona de carga. Se sitúa a 208 metros de la perpendicular de popa.

A continuación, se observa un esquema de este compartimento:



4.2 Zona de popa

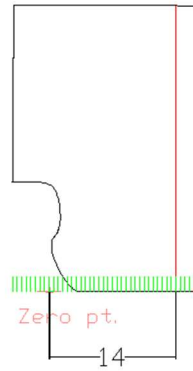
4.2.1 Pique de popa

El pique de popa está delimitado por un mamparo estanco que es necesario para separar tanques de lastre y otros fluidos de la cámara de máquina.

No existen indicaciones en el reglamento respecto su ubicación, pero si que se estima que debe estar localizado al 4% de L de la perpendicular de popa, aproximadamente, y no interesa excederse demasiado en este valor ya que los dos espacios restantes (Zona de carga y cámara de máquinas) necesitan un espacio amplio. Este valor en el caso del buque proyectado es:

$$4\% \text{ de } L = 10.2 \text{ metros}$$

En el caso del buque proyectado el valor será de 14 metros, haciéndolo coincidir así con la cuaderna número 28, extendiéndose desde la cuaderna -8.



Pique de popa

4.3 Cámara de máquinas

La cámara de máquinas está situada entre el pique de popa y la zona de carga. En este compartimento se situarán tanques de almacenaje de uso diario y los equipos necesarios para el funcionamiento del buque.

La eslora de la cámara de máquinas se estimará a partir de una expresión, en este momento seremos generosos con este espacio, siempre que el espacio de carga sea suficiente, ya que en buques de este tamaño la maquinaria es muy grande y hay que disponer de espacio suficiente para maniobrar en caso de avería o respetos.

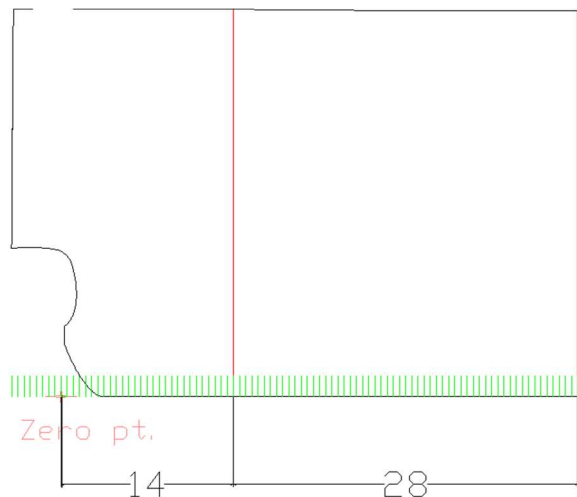
En el libro "Proyecto del buque mercante" se indica:

$$L_{CM} = 0.28 \times L_{pp}^{0.67} + 0.48 \times [kW]^{0.35} = 0.28 \times 255.1^{0.67} + 0.48 \times 22346^{0.35} = 27.5 \text{ m}$$

Haciendo coincidir el mamparo de proa de la cámara de máquinas con una cuaderna, se establece:

$$L_{CM} = 28 \text{ metros}$$

Coincidiendo dicho mamparo que separa la cámara de máquinas y la zona de carga en la cuaderna 84, a 42 metros de la perpendicular de popa.



Pique de popa

4.4 Zona de carga

En la zona de carga se albergará el gas natural licuado a transportar. Durante el diseño el volumen será la medida crítica para determinar si el compartimentado es adecuado y el buque es capaz de albergar toda la carga a transportar.

En primer lugar, se hará referencia a la compartimentación vertical y longitudinal de este espacio, es decir, doble fondo, doble casco y cofferdams. Después se definirán los tanques de carga.

La zona de carga se extiende desde los 42 metros de la perpendicular de popa a los 206 metros de la perpendicular de popa.

4.4.1 Cofferdams

En los espacios de carga debe de existir un espacio vacío que sirva de separación entre tanques y entre distintos compartimentos, estos espacios se llaman cofferdams y deben de ir vacíos, esto quiere decir, que no se podrán usar como tanques de lastre, etc.

En el buque del proyecto tendrán un espaciado de 4 metros. A continuación, se muestran en una tabla dónde estarán situados, y en el plano del compartimentado del anexo se pueden observar.

COFFERDAM	SITUACIÓN
Cofferdam 1	Entre cámara de máquinas y tanque de carga 1
Cofferdam 2	Entre tanque de carga 1 y 2
Cofferdam 3	Entre tanque de carga 2 y 3
Cofferdam 4	Entre tanque de carga 3 y 4
Cofferdam 5	Entre tanque de carga 4 y almacén

4.4.2 Tanques de carga

El convenio MARPOL, capítulo 4, indica que la eslora de los tanques de carga debe ser como máximo:

$$L_{MaxTanque} = \left(0.25 \times \frac{bi}{B} + 0.15 \right) \times L$$

Siendo "bi" la distancia desde el costado del buque al mamparo longitudinal exterior que delimita el tanque. En el caso del buque proyectado coincide con la anchura del doble casco. Resulta:

$$L_{MaxTanque} = 41.3 \text{ m}$$

Con el objetivo de que los mamparos transversales que dividen los tanques coincidan con las cuadernas de la zona de carga, se establece una eslora de tanque de entre 36 y 38 metros.

TANQUE		Eslora Tanque	Posición mamparo Proa - Posición mamparo popa	Cuaderna proa - Cuaderna Popa
Tanque 1	A	38	46 - 84	86 - 105
	B			
Tanque 2	A	36	88 - 124	107 - 125

	B			
Tanque 3	A	36	128 - 164	127 - 145
	B			
Tanque 4	A	36	168 - 204	147 - 165
	B			

Se comprueba que cumple con la eslora máxima indicada por MARPOL de 41,3 metros,

5 COMPARTIMENTACION VERTICAL

5.1 Doble fondo

A lo largo de la zona de máquinas, la zona de carga y el pañol se extenderá el doble fondo del buque.

La sociedad de clasificación indicada en las RPA de proyecto indica que la altura mínima del doble fondo es de 0,7 metros, y citando:

“La altura del doble fondo debe ser suficiente para asegurar el acceso a todas las partes, y, en el camino de la viga central, debe ser de no menos de 0.7 metros”

Además, para hacernos una idea de la altura que ha de tener el doble fondo, según indica el Marpol en el capítulo 3, regla 12, la altura mínima ha de ser al menos de las que se indican a continuación:

$$H_{Min_{DF}} = \min\left\{\left(\frac{B}{15}\right), 2\right\} = \min\{2.8, 2\} = 2 \text{ metros}$$

Tomaremos 2.5 metros como altura del doble fondo y se extenderá desde el mamparo del pique de proa hasta el mamparo del pique de popa, sin incluir ambos piques. Este espacio será destinado al transporte de consumibles y tanques de lastre.

5.2 Cubiertas en cámara de máquinas

La cámara de máquinas tendrá en primer lugar el doble fondo en el cual se encontrarán los tanques de aguas grises y lodos, en segundo lugar, hasta los 12,5 metros, se encontrará el motor propulsor, después se encontrará el grupo electrógeno hasta los 22,5 metros, por último, existirá una cubierta destinada a los tanques de combustible, aceite, etc.

5.3 Cubiertas en pañol

En el pañol al igual que en el resto de las zonas existirá un doble fondo, después se dispondrá hasta los 14,5 metros se dedicará al agua de lastre, a lo largo de los cuatro metros siguientes se dispondrán los tanques de combustible y por último existirá un espacio de almacenamiento de equipos.

6 COMPARTIMENTACIÓN LONGITUDINAL

6.1 Doble casco

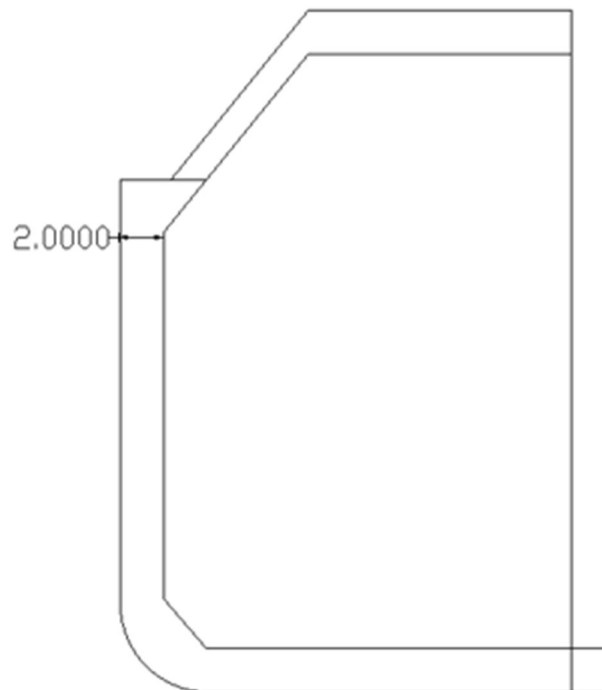
En los buques de transporte de gas natural licuado es obligatorio la existencia de doble casco, y tal y como indica el Código Internacional de Gasero, éste no puede ser de menos de 0.76 metros.

El reglamento SOLAS indica un valor de referencia para buques de carga:

$$e_{DC} = \frac{B}{20} = 2 \text{ metros}$$

En el caso de proyecto se indica que el espesor del doble casco será de 2 metros y que será dedicado a tanques de lastre.

A continuación, se muestra una imagen de la situación del doble casco:



6.2 Mamparos longitudinales

En crujía del buque de proyecto, a lo largo de la zona de carga y del pañol, se dispondrá de un mamparo longitudinal que divide el buque en dos partes simétricas, de esta forma los consumos, la carga, etcétera se divide en dos partes iguales, por tanto, en caso de accidente en una de las partes, la otra puede seguir funcionando.

7 JUSTIFICACIÓN DE LA CAPACIDAD DE TANQUES

En este apartado del documento se calculan el volumen mínimo que debe ser transportado de cada consumible para cumplir con la autonomía del buque, que según se indicó anteriormente era de aproximadamente 24 días.

Después, se comprobará que la disposición y compartimentado propuestos permiten transportar los mínimos calculados previamente.

Los tanques que se estudian son los que se muestran a continuación:

- Tanque de combustible
- Tanque de aceite
- Tanque de lodos
- Tanque de aguas grises
- Tanque de aguas negras
- Tanque de agua dulce
- Tanques de carga
- Tanque de lastre

7.1 Tanque de lastre

Los tanques de lastre existen para almacenar agua cuando sea necesario corregir el trimado, mejorar las condiciones de estabilidad y facilitar la navegación, este proceso es necesario cuando el mar es complicado, se han gastado los consumos o el buque navega en vacío.

Estos tanques se situarán de forma simétrica, y como se mencionó anteriormente, se localizarán en el doble fondo, doble casco y piques de proa y popa.

Para determinar el lastre mínimo necesario se parte de la premisa de que el buque debe ser capaz de garantizar que la hélice quede totalmente sumergida, para ello, el calado mínimo ha de ser:

$$T_{Min} = D_{Helice} + 0.1 \times D_{Hélice} = 8.8 + 0.1 \times 8.8 = 8.9 \text{ m}$$

A partir del calado mínimo, se calcula el desplazamiento mínimo.

$$\Delta_{Min} = Cb \times Lpp \times B \times T_{Min} \times \rho = 78511,8 \text{ Ton}$$

Por tanto, el peso del agua de lastre:

$$P_{Lastre} = \Delta_{Min} - P_{Rosca} - Otros$$

Dentro de otros tenemos la tripulación y pertrechos al 100%, los lodos, aguas residuales al 90%, y por último el resto de los consumos al 10%. Tomando estos datos del cuaderno 2, este valor asciende a aproximadamente 300 toneladas.

$$P_{Lastre} = 78511,8 - 36219,93 - 300 = 41991,85 \text{ ton}$$

$$V_{Lastre} = \frac{41991,85}{1.025}$$

$$V_{Lastre} = 40967,7 \cong 41000 \text{ m}^3$$

Este es el valor mínimo y se pretende, siempre que sea posible, que sea superior al mínimo calculado, para asegurar así que la hélice estará siempre sumergida y evitar así posibles problemas.

7.2 Tanque de combustible

En el cuaderno 11 se escogen unos motores generadores cuyo consumo se indica que es 177.2 g/kWh, por tanto, a partir de la autonomía y del consumo se estima:

$$\begin{aligned} \text{ConsumoReal} &= \text{Autonomía}[h] \times n^{\circ} \text{generadores (en funcionamiento)} \times \text{Consumo} \\ &\times \text{Potencia}[kW] \times \frac{1}{10^6} = 581.4 * 177.2 * 3 \times 14400 \times \frac{1}{10^6} = 3783 \text{ Ton} \end{aligned}$$

Siendo la densidad del combustible 0.85 tn/m³, se obtiene un volumen de combustible necesario:

$$V_{Comb} = 4450.6 \text{ m}^3$$

➤ TANQUE PAÑOL

Se instalarán dos tanques almacén en proa, con una capacidad total del volumen de combustible total menos el consumo de dos días.

El combustible que se consume en dos días se calcula de la siguiente forma:

$$\begin{aligned} \text{Consumo}_{2D} &= 48h \times 3 \times 0.85 \times 14400 \times 177.2 = 312325632 \text{ g} = 312.3 \text{ toneladas} \\ &= 367.44 \text{ m}^3 \end{aligned}$$

Por tanto, la capacidad de cada tanque de combustible del almacén resulta:

$$\text{Capacidad}_{\text{TanqueAlm}} = \frac{4450.6 \text{ m}^3 - 367.44 \text{ m}^3}{2} = 2042 \text{ m}^3$$

➤ TANQUE DE SEDIMENTACION

El tanque de sedimentación es el tanque intermedio entre los tanques de combustible en el almacén y el tanque de uso diario, por tanto, tendrán una capacidad capaz de suministrar el combustible al tanque de uso diario, que en el caso proyectado se ha dimensionado para 2 días. Se localizará en cámara de máquinas y su capacidad será:

$$V_{\text{TanqueSedimentacion}} = 370 \text{ m}^3$$

➤ TANQUE DE USO DIARIO

El tanque de uso diario se sitúa en cámara de máquinas y tendrá capacidad para albergar el combustible necesario para dos días de navegación, por tanto:

$$V_{\text{UsoDiario}} = 370 \text{ m}^3$$

7.3 Tanque de aceite

Observando el consumo de aceite indicado en los datos técnicos del motor, y teniendo en cuenta que el buque lleva a bordo 4 motores:

$$C_{\text{Aceite}} = C_e * Pot * t_{Nav} = 0.5 \frac{g}{kW} * 581.4 \text{ h} * 32000 * 10^{-6} = 9.3 \text{ Toneladas}$$

Teniendo en cuenta la densidad del aceite que es 0.9 ton/m³:

$$V_{\text{Aceite}} = \frac{9.3}{0.9} = 10.33 \text{ m}^3 \text{ (TOTAL TODOS LOS MOTORES)}$$

Se instala un tanque de aceite en la cámara de máquinas.

7.4 Tanque aguas grises y negras

Se estima en la norma UNE 15749 que cada tripulante genera al día 180 litros de aguas sucias, por tanto, en el caso del buque proyectado resulta:

$$V_{AguasSucias} = 126000 \text{ litros} = 126 \text{ m}^3$$

Se coloca un tanque en el doble fondo de la cámara de máquinas.

7.5 Tanque de lodos

Para dimensionar este tanque se utiliza la normativa MARPOL, que estima:

$$V_{TLodos} = k * C * D$$

Siendo,

- "k" un factor que toma el valor de 0.01 los buques que utilizan fuel oil en las maquinas principales.
- "C" el consumo diario de fuel
- "D" el tiempo máximo que esta el buque sin parar en puerto se tomara como la autonomía del buque.

Resulta:

$$V_{TLodos} = 0.01 * 185 * 25$$

$$V_{TLodos} = 46.25 \text{ m}^3 \text{ (TOTAL)}$$

Este tanque se localizará también en el doble fondo de la cámara de máquinas.

7.6 Tanque agua dulce

Se utiliza la norma UNE ISO 15748 para estimar el consumo de agua dulce en el buque, esta norma aproxima a 175 litros de agua dulce consumida por persona y día:

$$V_{AD} = 175 * 25 * 28 = 122500 \text{ litros} = 122.5 \text{ m}^3$$

7.7 Comprobación capacidad de tanques

A continuación, se muestra una tabla donde se calcula la capacidad de los tanques que se definieron anteriormente. Esto se realiza con ayuda de Maxsurf Stability:

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Item name	Specific gravity	Total mass [Tonne]	Total volume [m3]	Long. Arm [m]	Trans. Arm [m]	Vert. Arm [m]	Total FSM [tonne.m]
Lightship		36219,9		116,8	0	16,5	0
Pique proa	1,025	6792,571	6626,899	249,051	0	16,692	26357,312
Pique popa	1,025	11501,797	11221,266	6,126	0	20,485	90066,908
Comb (Uso Diario)	0,9	396,9	441	27	0	24,75	750
Comb Sedimentacion	0,9	396,9	441	37	0	24,75	750
Aceite Lub	0,9	28,224	31,36	21	0	23,5	76,8
Agua dulce	1	211,68	211,68	17	0	24,75	256
AGrises CM	1,025	273,738	267,061	21,065	0	1,282	612,267
Lodos CM	1	264,962	264,962	35,007	0	1,255	597,333
CombAlm 1	0,9	2298,918	2554,353	224,337	-9,633	18,009	19172,511
CombAlm2	0,9	2298,918	2554,353	224,337	9,633	18,009	19172,511
LastreAlm 1	1,025	6542,62	6383,044	224,508	-9,086	9,046	16261,594
LastreAlm 2	1,025	6542,62	6383,044	224,508	9,086	9,046	16261,594
Doble fondo Alm 1	1,025	1044,099	1018,633	224,986	-7,551	1,345	12058,135
Doble fondo Alm 2	1,025	1044,099	1018,633	224,986	7,551	1,345	12058,136
Doble fondo Carga 1	1,025	3265,976	3186,319	86,596	-8,337	1,321	43113,061
Doble fondo Carga 2	1,025	3265,976	3186,319	86,596	8,337	1,321	43113,061
Doble fondo Carga 3	1,025	3647,143	3558,188	164,874	-9,359	1,297	53020,427
Doble fondo Carga 4	1,025	3647,143	3558,188	164,874	9,359	1,297	53020,427
Doble casco 1	1,025	3526,947	3440,924	130,549	-20,464	17,708	13,125
Doble casco 1	1,025	3599,887	3512,085	130,352	20,465	18	13,145
Tanque 1A	0,46	8777,984	19082,573	65,099	-9,427	16,497	9991,277
Tanque 1B	0,46	8777,984	19082,573	65,099	9,427	16,497	9991,277
Tanque 2A	0,46	8387,044	18232,704	106	-9,5	16,4	9465,42
Tanque 2B	0,46	8387,044	18232,704	106	9,5	16,4	9465,42
Tanque 3A	0,46	8387,044	18232,704	146	-9,5	16,4	9465,42
Tanque 3B	0,46	8387,044	18232,704	146	9,5	16,4	9465,42

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Tanque 4A	0,46	8387,044	18232,704	186	-9,5	16,4	9465,42
Tanque 4B	0,46	8387,044	18232,704	186	9,5	16,4	9465,42
Total Loadcase		128469,351	207420,683	135,703	0,012	14,318	483519,421
FS correction						3,764	
VCG fluid						18,082	

Con el objetivo de comprobar si los tanques establecidos satisfacen los mínimos establecidos a lo largo del apartado 3 de este documento, se muestra a continuación una tabla comparativa con las capacidades mínimas agrupadas:

TANQUE	MÍNIMO [m3]	C4 [m3]
Combustible almacén 1	2042	2554.35
Combustible almacén 2	2042	2554.35
Combustible uso diario	370	441
Combustible sedimentación	370	441
Aceite cámara de máquinas	10,33	31.36
Aguas grises y negras	126,5	267.1
Lodos	46,25	264.9
Agua dulce	122,5	211.7
LASTRE TOTAL	41000	53152.6
Pique proa		6626.9
Pique popa		11221.3
Doble fondo		15526.3
Almacén		12766.1
Doble casco		7012
CARGA TOTAL	140000	147561.4
Carga 1A		19273.8
Carga 1B		19307.5
Carga 2A		18433.8
Carga 2B		18433.8
Carga 3A		18433.8
Carga 3B		18433.8
Carga 4A		18433.8
Carga 4B		18433.8

Como se indicó con anterioridad, el volumen de lastre es superior al mínimo establecido para así asegurar que la hélice funcionara completamente sumergida en todo momento.

Maxsurf establece una capacidad de carga total de 149217.8 metros cúbicos. Que este valor sea superior a lo establecido en las RPA del proyecto se debe a la permeabilidad y al límite de llenado de los tanques. Se muestra a continuación el cálculo:

- La permeabilidad es de 0.97, y teniendo en cuenta que se requiere una capacidad de 140000 metros cúbicos:

$$V = \frac{140000}{0.97} = 144329.9 \text{ m}^3$$

- Además, según el código internacional de gaseros (CIG) establece el límite de llenado al 98%:

$$V = \frac{144329.9}{0.98} = 147275.4 \text{ m}^3$$

Se comprueba de esta forma que el volumen cumple con lo establecido en las RPA del proyecto.

8 HIDROSTÁTICAS

Los asientos indicados en Maxsurf Stability para el cálculo corresponden con aproximadamente el 1.5% de la eslora del buque proyectado. Se comprueban los asientos por proa y por popa, por tanto, en el programa hay que indicar los valores en positivo y en negativo.

En el caso de proyecto se comprobarán los asientos comprendidos en el rango $[-4, 4]$, con un intervalo de 0.5.

Se calculará para distintos valores de calados. Con el objetivo de responder a todas las posibles situaciones, el rango de calados a tener en cuenta será aquel que comprenda desde unos desplazamientos inferiores al peso en rosca calculado en el cuaderno 2 (36219.9 Toneladas) hasta un calado ligeramente superior al que se indicó en cuaderno 3 en Maxsurf Modeler (12. metros).

A continuación, se presentan los informes proporcionados por el Software para cada caso.

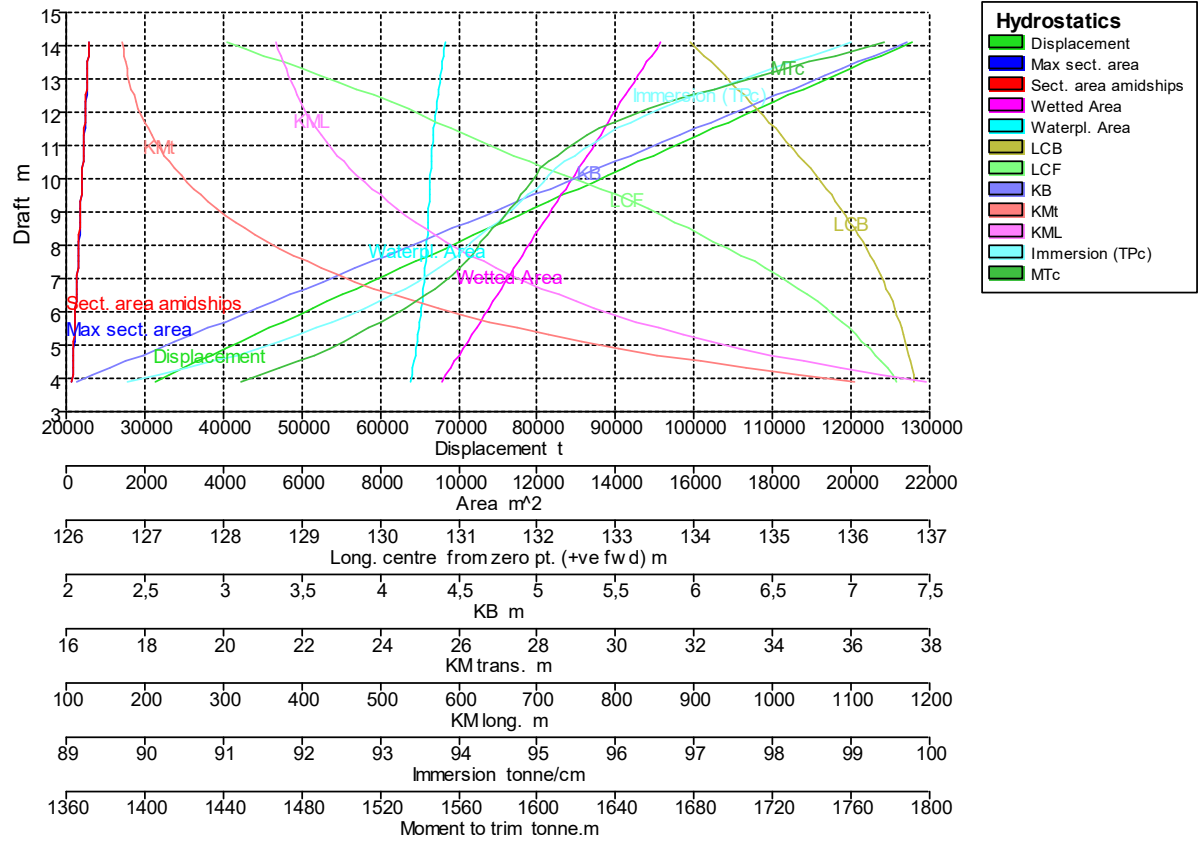
Fixed Trim = 0 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	31257	3,900	0,000	258,696	41,548	9569,849	8759,350	0,734	136,807	136,585	2,066	34,005	1192,937	36,071	1195,003	89,783	1448,916
4,100	33057	4,100	0,000	258,940	41,606	9682,245	8797,296	0,736	136,792	136,523	2,171	32,467	1136,451	34,638	1138,622	90,172	1459,286
4,300	34865	4,300	0,000	259,160	41,659	9793,716	8832,563	0,738	136,776	136,458	2,276	31,059	1085,114	33,336	1087,390	90,534	1469,052
4,500	36679	4,500	0,000	259,287	41,699	9904,483	8865,335	0,740	136,758	136,386	2,381	29,765	1038,256	32,147	1040,638	90,870	1478,280
4,700	38500	4,700	0,000	259,398	41,737	10014,186	8894,902	0,743	136,738	136,314	2,486	28,568	995,002	31,054	997,488	91,173	1486,542
4,900	40326	4,900	0,000	259,492	41,766	10122,871	8922,254	0,745	136,716	136,232	2,591	27,462	955,133	30,053	957,723	91,453	1494,208
5,100	42158	5,100	0,000	259,566	41,792	10231,612	8947,432	0,747	136,693	136,141	2,696	26,434	918,245	29,129	920,940	91,711	1501,295
5,300	43995	5,300	0,000	259,624	41,815	10339,680	8970,959	0,750	136,667	136,056	2,800	25,478	884,071	28,279	886,871	91,952	1507,947
5,500	45836	5,500	0,000	259,668	41,832	10447,156	8993,299	0,752	136,641	135,975	2,905	24,589	852,419	27,494	855,324	92,181	1514,376
5,700	47682	5,700	0,000	259,696	41,849	10554,198	9013,951	0,754	136,615	135,890	3,009	23,758	822,840	26,767	825,849	92,393	1520,260
5,900	49531	5,900	0,000	259,522	41,861	10660,675	9034,661	0,757	136,586	135,786	3,113	22,981	795,666	26,094	798,779	92,605	1526,676
6,100	51385	6,100	0,000	259,337	41,872	10766,530	9053,482	0,759	136,556	135,677	3,217	22,250	770,060	25,468	773,278	92,798	1532,444
6,300	53243	6,300	0,000	259,187	41,883	10872,456	9071,599	0,762	136,525	135,566	3,321	21,565	746,093	24,887	749,415	92,984	1538,033
6,500	55104	6,500	0,000	259,072	41,890	10979,210	9088,448	0,764	136,490	135,446	3,425	20,919	723,510	24,344	726,935	93,157	1543,250
6,700	56969	6,700	0,000	258,972	41,897	11086,031	9104,116	0,767	136,453	135,323	3,529	20,310	702,150	23,839	705,679	93,317	1548,011
6,900	58837	6,900	0,000	258,885	41,904	11192,963	9118,885	0,769	136,415	135,195	3,633	19,735	681,976	23,368	685,609	93,469	1552,483
7,100	60708	7,100	0,000	258,808	41,909	11300,103	9132,776	0,771	136,375	135,058	3,737	19,191	662,880	22,928	666,617	93,611	1556,655
7,300	62582	7,300	0,000	258,735	41,913	11407,500	9145,709	0,773	136,333	134,915	3,841	18,676	644,760	22,517	648,601	93,744	1560,504
7,500	64458	7,500	0,000	258,666	41,918	11515,252	9157,624	0,775	136,289	134,764	3,944	18,188	627,482	22,132	631,426	93,866	1563,897
7,700	66337	7,700	0,000	258,601	41,922	11623,534	9168,496	0,777	136,243	134,603	4,048	17,725	610,988	21,773	615,035	93,977	1566,854
7,900	68218	7,900	0,000	258,537	41,926	11732,434	9178,625	0,778	136,195	134,429	4,151	17,285	595,268	21,436	599,419	94,081	1569,520
8,100	70101	8,100	0,000	258,472	41,930	11842,431	9186,979	0,780	136,145	134,240	4,255	16,866	580,056	21,121	584,311	94,167	1571,319
8,300	71985	8,300	0,000	258,406	41,933	11950,750	9197,752	0,782	136,092	134,080	4,358	16,470	566,108	20,828	570,466	94,277	1574,495
8,500	73872	8,500	0,000	258,342	41,936	12058,429	9208,434	0,784	136,038	133,924	4,461	16,093	552,838	20,554	557,299	94,386	1577,638
8,700	75761	8,700	0,000	258,281	41,939	12166,539	9218,863	0,785	135,983	133,760	4,564	15,734	540,194	20,299	544,758	94,493	1580,736
8,900	77653	8,900	0,000	258,210	41,942	12275,145	9228,844	0,787	135,926	133,589	4,667	15,392	528,082	20,059	532,750	94,596	1583,644
9,100	79546	9,100	0,000	258,132	41,944	12384,285	9238,759	0,788	135,868	133,408	4,771	15,065	516,544	19,835	521,315	94,697	1586,599
9,300	81441	9,300	0,000	258,046	41,947	12494,073	9248,250	0,790	135,808	133,217	4,874	14,752	505,465	19,626	510,338	94,795	1589,361
9,500	83339	9,500	0,000	257,953	41,949	12604,529	9257,425	0,792	135,746	133,017	4,977	14,453	494,841	19,430	499,817	94,889	1592,016

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Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
9,700	85238	9,700	0,000	257,849	41,951	12715,748	9266,299	0,793	135,683	132,806	5,080	14,168	484,636	19,247	489,715	94,980	1594,539
9,900	87139	9,900	0,000	257,734	41,953	12827,356	9275,224	0,795	135,617	132,590	5,183	13,894	474,889	19,077	480,072	95,071	1597,159
10,100	89041	10,100	0,000	257,607	41,955	12939,354	9283,300	0,796	135,549	132,356	5,286	13,632	465,402	18,918	470,688	95,154	1599,278
10,300	90946	10,300	0,000	257,464	41,956	13052,300	9291,160	0,798	135,480	132,112	5,388	13,381	456,277	18,770	461,666	95,234	1601,318
10,500	92852	10,500	0,000	257,304	41,958	13163,410	9302,463	0,800	135,408	131,907	5,491	13,141	448,079	18,632	453,570	95,350	1605,418
10,700	94761	10,700	0,000	257,122	41,959	13274,656	9314,579	0,801	135,335	131,706	5,594	12,910	440,329	18,504	445,923	95,474	1610,017
10,900	96672	10,900	0,000	256,910	41,961	13386,423	9326,984	0,803	135,261	131,501	5,697	12,689	432,924	18,386	438,621	95,602	1614,816
11,100	98586	11,100	0,000	256,655	41,962	13497,897	9340,102	0,805	135,185	131,300	5,800	12,476	425,908	18,276	431,708	95,736	1620,072
11,300	100502	11,300	0,000	256,311	41,963	13608,825	9353,445	0,807	135,108	131,095	5,903	12,272	419,191	18,175	425,094	95,873	1625,510
11,500	102422	11,500	0,000	255,659	41,964	13719,598	9367,593	0,810	135,031	130,894	6,006	12,075	412,836	18,081	418,842	96,018	1631,451
11,700	104344	11,700	0,000	254,640	41,965	13798,161	9384,636	0,814	134,952	130,723	6,110	11,885	407,141	17,995	413,251	96,193	1639,203
11,900	106270	11,900	0,000	255,094	41,966	13905,970	9402,965	0,814	134,874	130,546	6,213	11,703	401,835	17,916	408,047	96,380	1647,780
12,100	108200	12,100	0,000	256,142	41,967	14014,684	9422,289	0,812	134,795	130,359	6,316	11,528	396,852	17,844	403,168	96,578	1657,003
12,300	110133	12,300	0,000	258,954	41,968	14125,819	9443,763	0,804	134,715	130,145	6,419	11,359	392,370	17,778	398,789	96,799	1667,714
12,500	112072	12,500	0,000	258,970	41,969	14237,655	9466,043	0,805	134,634	129,922	6,523	11,196	388,143	17,719	394,666	97,027	1678,947
12,700	114015	12,700	0,000	258,989	41,970	14350,118	9488,898	0,806	134,552	129,696	6,626	11,039	384,114	17,665	390,741	97,261	1690,511
12,900	115962	12,900	0,000	259,010	41,971	14462,685	9512,248	0,807	134,469	129,465	6,730	10,888	380,266	17,618	386,996	97,501	1702,365
13,100	117914	13,100	0,000	259,031	41,971	14575,539	9536,000	0,808	134,384	129,232	6,834	10,742	376,572	17,576	383,406	97,744	1714,431
13,300	119872	13,300	0,000	259,054	41,972	14689,045	9559,957	0,809	134,298	128,996	6,938	10,601	373,002	17,539	379,940	97,990	1726,602
13,500	121834	13,500	0,000	259,077	41,973	14803,162	9584,248	0,810	134,211	128,758	7,042	10,466	369,565	17,508	376,608	98,239	1738,951
13,700	123801	13,700	0,000	259,099	41,973	14916,956	9608,908	0,811	134,123	128,521	7,146	10,336	366,259	17,481	373,405	98,491	1751,488
13,900	125773	13,900	0,000	259,122	41,974	15030,957	9633,911	0,812	134,033	128,283	7,250	10,210	363,072	17,460	370,322	98,748	1764,189
14,100	127751	14,100	0,000	259,145	41,974	15145,003	9659,170	0,813	133,942	128,045	7,355	10,089	359,986	17,444	367,341	99,006	1776,999



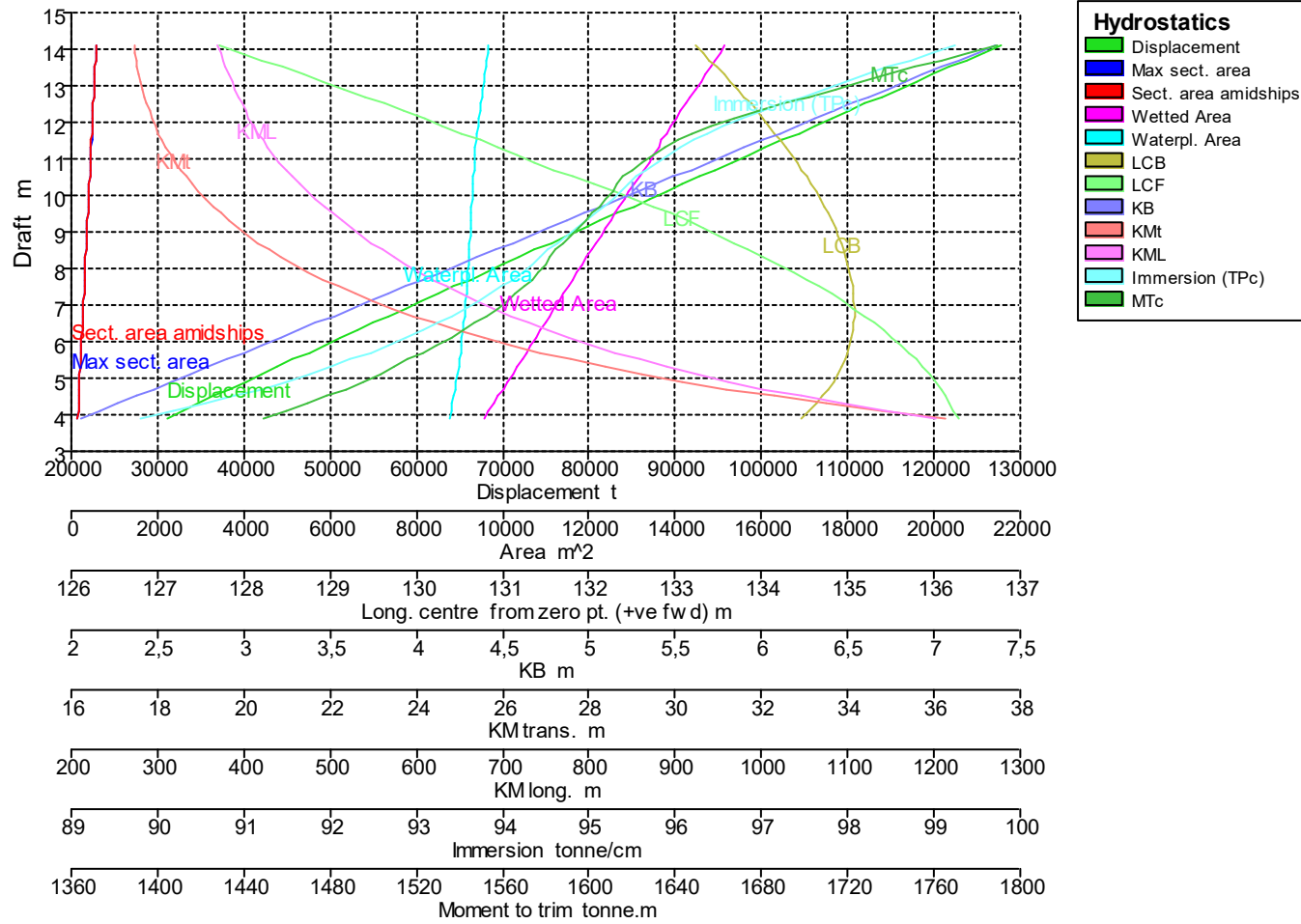
Fixed Trim = 0,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	31101	3,883	0,500	258,553	41,521	9567,452	8760,396	0,730	134,460	136,277	2,059	34,186	1198,929	36,245	1200,986	89,794	1448,991
4,100	32901	4,083	0,500	258,801	41,586	9679,597	8798,811	0,733	134,557	136,228	2,164	32,639	1141,828	34,803	1143,990	90,188	1459,347
4,300	34709	4,283	0,500	258,969	41,639	9791,433	8834,838	0,735	134,642	136,181	2,269	31,220	1090,224	33,489	1092,491	90,557	1469,460
4,500	36524	4,483	0,500	259,119	41,685	9902,025	8867,722	0,738	134,716	136,132	2,374	29,914	1042,912	32,288	1045,285	90,894	1478,705
4,700	38345	4,683	0,500	259,254	41,723	10012,003	8898,458	0,740	134,782	136,079	2,479	28,709	999,614	31,189	1002,091	91,209	1487,517
4,900	40172	4,883	0,500	259,370	41,757	10121,324	8926,696	0,742	134,839	136,014	2,584	27,594	959,652	30,178	962,234	91,499	1495,637
5,100	42005	5,084	0,500	259,465	41,782	10229,580	8952,494	0,745	134,889	135,947	2,689	26,559	922,565	29,248	925,252	91,763	1502,979
5,300	43843	5,284	0,500	259,545	41,808	10337,715	8976,151	0,747	134,932	135,873	2,793	25,596	888,094	28,389	890,886	92,006	1509,667
5,500	45685	5,484	0,500	259,596	41,825	10445,368	8998,439	0,749	134,969	135,793	2,898	24,698	856,177	27,596	859,073	92,234	1516,127
5,700	47532	5,684	0,500	259,428	41,843	10552,225	9020,903	0,752	135,000	135,704	3,002	23,861	826,953	26,863	829,954	92,464	1523,156
5,900	49383	5,884	0,500	259,288	41,857	10658,661	9041,689	0,755	135,026	135,612	3,106	23,077	799,557	26,184	802,662	92,677	1529,644
6,100	51238	6,084	0,500	259,169	41,868	10765,042	9061,567	0,758	135,046	135,516	3,211	22,343	773,991	25,553	777,200	92,881	1535,968
6,300	53098	6,285	0,500	259,063	41,879	10871,905	9080,046	0,760	135,060	135,411	3,315	21,652	749,907	24,966	753,220	93,070	1541,806
6,500	54961	6,485	0,500	258,966	41,888	10978,733	9097,472	0,763	135,070	135,306	3,419	21,002	727,235	24,421	730,652	93,249	1547,292
6,700	56828	6,685	0,500	258,893	41,895	11085,554	9113,780	0,765	135,075	135,192	3,523	20,388	705,858	23,911	709,379	93,416	1552,459
6,900	58698	6,885	0,500	258,832	41,902	11192,444	9129,266	0,767	135,076	135,071	3,627	19,810	685,670	23,437	689,295	93,575	1557,335
7,100	60571	7,086	0,500	258,777	41,907	11299,405	9143,907	0,769	135,074	134,946	3,731	19,263	666,579	22,994	670,309	93,725	1561,953
7,300	62448	7,286	0,500	258,725	41,912	11406,561	9157,478	0,771	135,067	134,812	3,834	18,745	648,424	22,579	652,258	93,864	1566,144
7,500	64327	7,486	0,500	258,676	41,917	11513,943	9170,329	0,773	135,058	134,672	3,938	18,254	631,198	22,192	635,135	93,996	1570,088
7,700	66208	7,686	0,500	258,629	41,921	11621,793	9182,367	0,775	135,044	134,521	4,042	17,788	614,797	21,830	618,838	94,119	1573,713
7,900	68092	7,887	0,500	258,583	41,925	11730,039	9193,361	0,777	135,027	134,362	4,145	17,346	599,102	21,491	603,246	94,232	1576,872
8,100	69978	8,087	0,500	258,534	41,929	11838,916	9203,403	0,779	135,006	134,192	4,249	16,925	584,072	21,174	588,320	94,335	1579,602
8,300	71866	8,287	0,500	258,492	41,932	11948,729	9211,992	0,780	134,982	134,007	4,352	16,524	569,549	20,876	573,901	94,423	1581,597
8,500	73755	8,488	0,500	258,449	41,935	12057,775	9222,110	0,782	134,954	133,837	4,456	16,144	556,074	20,600	560,529	94,527	1584,523
8,700	75647	8,688	0,500	258,400	41,938	12165,668	9233,234	0,784	134,923	133,677	4,559	15,783	543,450	20,342	548,008	94,641	1588,039
8,900	77541	8,888	0,500	258,344	41,941	12274,027	9244,210	0,785	134,890	133,507	4,662	15,438	531,427	20,101	536,089	94,753	1591,573
9,100	79438	9,089	0,500	258,281	41,944	12382,932	9254,875	0,787	134,855	133,329	4,766	15,110	519,919	19,875	524,683	94,862	1594,985
9,300	81337	9,289	0,500	258,213	41,946	12492,323	9265,297	0,789	134,817	133,143	4,869	14,796	508,902	19,664	513,770	94,969	1598,312
9,500	83238	9,489	0,500	258,139	41,948	12602,452	9275,458	0,790	134,776	132,945	4,972	14,495	498,350	19,467	503,321	95,073	1601,570

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
9,700	85141	9,690	0,500	258,057	41,950	12713,210	9285,313	0,792	134,732	132,739	5,075	14,207	488,214	19,283	493,288	95,174	1604,699
9,900	87045	9,890	0,500	257,967	41,952	12824,725	9294,874	0,793	134,686	132,522	5,179	13,932	478,465	19,111	483,643	95,272	1607,690
10,100	88952	10,091	0,500	257,868	41,954	12937,009	9304,535	0,795	134,636	132,299	5,282	13,669	469,151	18,951	474,432	95,371	1610,788
10,300	90861	10,291	0,500	257,760	41,956	13049,387	9313,294	0,796	134,584	132,060	5,385	13,416	460,071	18,801	465,455	95,461	1613,378
10,500	92772	10,492	0,500	257,644	41,957	13162,734	9321,896	0,798	134,529	131,809	5,488	13,174	451,333	18,662	456,820	95,549	1615,901
10,700	94684	10,692	0,500	257,519	41,959	13275,003	9332,902	0,799	134,471	131,586	5,591	12,943	443,320	18,534	448,910	95,662	1619,857
10,900	96599	10,893	0,500	257,386	41,960	13386,855	9345,584	0,801	134,411	131,376	5,694	12,720	435,874	18,414	441,567	95,792	1624,815
11,100	98517	11,093	0,500	257,245	41,962	13499,220	9358,586	0,803	134,350	131,164	5,797	12,507	428,754	18,304	434,551	95,926	1629,975
11,300	100438	11,293	0,500	257,093	41,963	13611,870	9372,065	0,804	134,286	130,951	5,900	12,302	421,974	18,202	427,874	96,064	1635,460
11,500	102361	11,494	0,500	256,948	41,964	13692,960	9386,288	0,806	134,221	130,739	6,004	12,104	415,559	18,108	421,562	96,209	1641,449
11,700	104286	11,694	0,500	256,792	41,965	13803,789	9401,511	0,807	134,155	130,516	6,107	11,915	409,525	18,022	415,632	96,365	1648,085
11,900	106216	11,895	0,500	258,876	41,966	13913,982	9420,272	0,802	134,087	130,307	6,211	11,732	404,235	17,943	410,445	96,558	1656,974
12,100	108149	12,095	0,500	258,886	41,967	14025,395	9441,794	0,803	134,017	130,086	6,314	11,556	399,545	17,871	405,859	96,778	1667,690
12,300	110087	12,295	0,500	258,904	41,968	14137,504	9463,999	0,804	133,946	129,861	6,418	11,387	395,103	17,805	401,520	97,006	1678,848
12,500	112029	12,496	0,500	258,924	41,969	14249,757	9486,805	0,805	133,873	129,630	6,521	11,224	390,879	17,745	397,399	97,240	1690,374
12,700	113976	12,696	0,500	258,946	41,970	14362,312	9510,034	0,806	133,799	129,397	6,625	11,067	386,833	17,692	393,458	97,478	1702,141
12,900	115928	12,897	0,500	258,970	41,970	14475,196	9533,730	0,807	133,723	129,161	6,729	10,915	382,958	17,645	389,687	97,721	1714,154
13,100	117885	13,097	0,500	258,993	41,971	14588,306	9557,742	0,808	133,645	128,925	6,833	10,770	379,227	17,603	386,059	97,967	1726,324
13,300	119847	13,298	0,500	259,016	41,972	14701,659	9582,070	0,809	133,566	128,686	6,937	10,629	375,636	17,567	382,573	98,216	1738,673
13,500	121813	13,498	0,500	259,039	41,972	14815,444	9606,582	0,810	133,485	128,446	7,041	10,494	372,159	17,536	379,200	98,467	1751,097
13,700	123785	13,699	0,500	259,064	41,973	14929,928	9631,347	0,811	133,403	128,205	7,146	10,364	368,797	17,510	375,942	98,721	1763,633
13,900	125762	13,899	0,500	259,087	41,974	15044,181	9656,410	0,812	133,320	127,964	7,250	10,239	365,551	17,489	372,800	98,978	1776,309
14,100	127744	14,100	0,500	259,110	41,974	15158,505	9681,814	0,813	133,235	127,724	7,355	10,118	362,417	17,473	369,772	99,239	1789,136



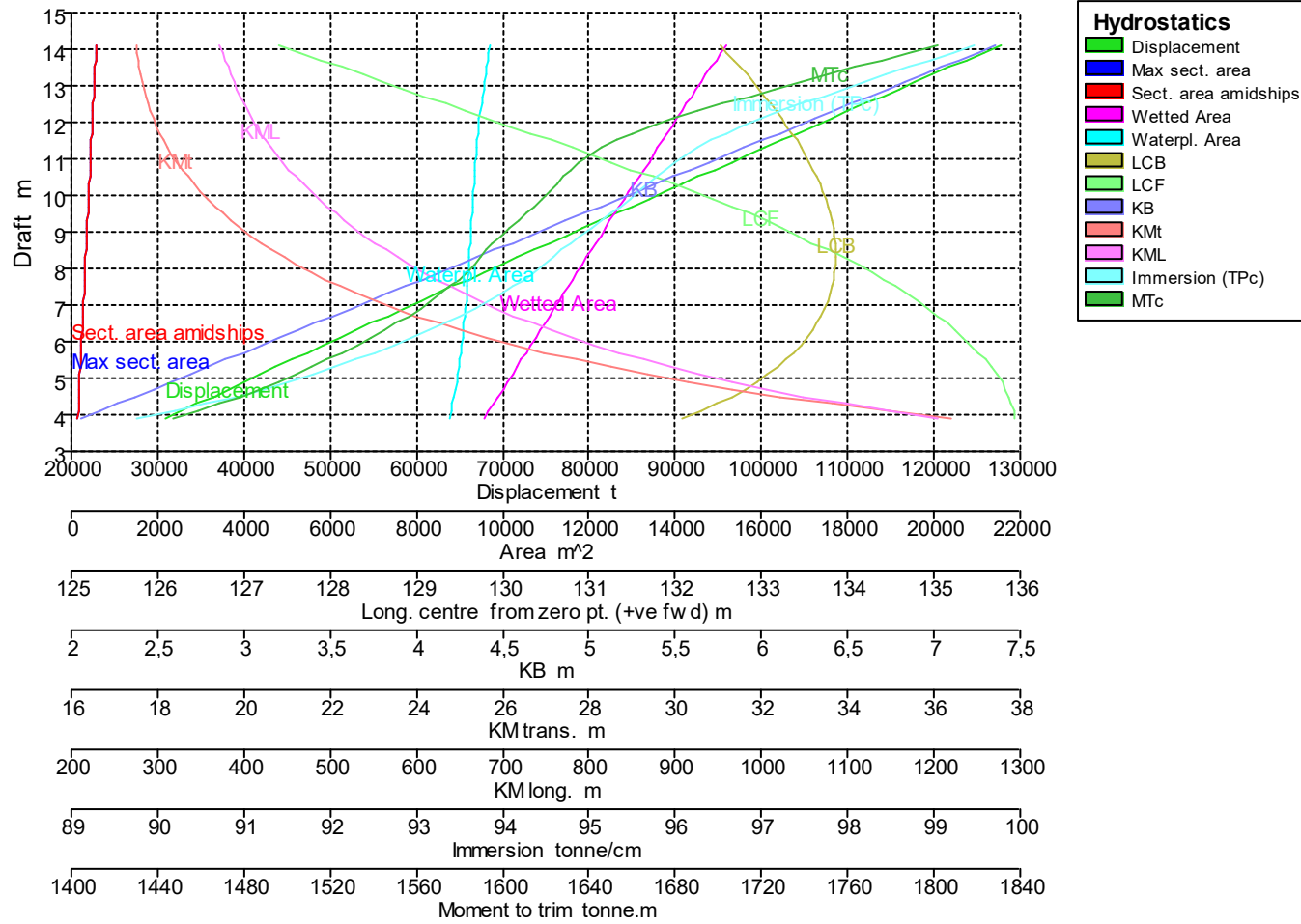
Fixed Trim = 1 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	30950	3,867	1,000	258,336	41,494	9562,245	8757,314	0,727	132,091	135,925	2,057	34,346	1203,094	36,403	1205,141	89,762	1447,024
4,100	32751	4,067	1,000	258,554	41,566	9676,849	8799,201	0,730	132,302	135,929	2,162	32,799	1146,768	34,961	1148,921	90,192	1459,007
4,300	34558	4,267	1,000	258,747	41,619	9788,046	8835,002	0,733	132,490	135,897	2,267	31,369	1094,516	33,635	1096,775	90,559	1468,903
4,500	36373	4,467	1,000	258,922	41,671	9899,117	8869,032	0,735	132,659	135,868	2,372	30,055	1047,126	32,427	1049,490	90,908	1478,624
4,700	38195	4,668	1,000	259,080	41,709	10009,257	8900,216	0,738	132,811	135,827	2,476	28,841	1003,606	31,317	1006,075	91,227	1487,668
4,900	40022	4,868	1,000	259,220	41,746	10118,745	8929,417	0,740	132,948	135,789	2,581	27,721	963,525	30,302	966,098	91,527	1496,135
5,100	41856	5,068	1,000	259,337	41,773	10227,441	8955,729	0,743	133,071	135,740	2,685	26,677	926,331	29,362	929,009	91,796	1503,810
5,300	43694	5,268	1,000	259,366	41,799	10335,146	8980,828	0,745	133,184	135,676	2,790	25,710	891,983	28,500	894,766	92,053	1511,207
5,500	45537	5,468	1,000	259,248	41,819	10442,717	9004,563	0,748	133,284	135,597	2,894	24,805	860,307	27,699	863,194	92,297	1518,601
5,700	47385	5,669	1,000	259,161	41,836	10549,864	9026,594	0,751	133,373	135,511	2,999	23,960	830,705	26,959	833,697	92,523	1525,433
5,900	49237	5,869	1,000	259,084	41,853	10656,856	9048,220	0,753	133,453	135,430	3,103	23,172	803,294	26,274	806,390	92,744	1532,363
6,100	51095	6,069	1,000	259,018	41,864	10764,273	9068,462	0,756	133,523	135,341	3,207	22,431	777,596	25,638	780,797	92,952	1538,901
6,300	52956	6,270	1,000	258,956	41,875	10871,440	9087,544	0,759	133,584	135,252	3,311	21,736	753,460	25,047	756,765	93,147	1545,070
6,500	54821	6,470	1,000	258,897	41,885	10978,330	9105,608	0,761	133,639	135,154	3,415	21,082	730,758	24,497	734,168	93,332	1550,925
6,700	56689	6,671	1,000	258,834	41,892	11085,236	9122,701	0,763	133,687	135,048	3,519	20,465	709,387	23,984	712,900	93,508	1556,527
6,900	58562	6,871	1,000	258,788	41,899	11192,115	9138,884	0,765	133,728	134,938	3,623	19,883	689,192	23,506	692,810	93,674	1561,808
7,100	60437	7,071	1,000	258,753	41,906	11299,037	9154,049	0,768	133,763	134,821	3,727	19,333	670,045	23,060	673,767	93,829	1566,704
7,300	62315	7,272	1,000	258,720	41,910	11406,033	9168,546	0,770	133,793	134,697	3,831	18,812	651,945	22,643	655,771	93,978	1571,437
7,500	64196	7,473	1,000	258,688	41,915	11513,312	9182,168	0,772	133,817	134,564	3,935	18,318	634,738	22,253	638,668	94,117	1575,835
7,700	66080	7,673	1,000	258,657	41,920	11620,735	9195,111	0,773	133,835	134,426	4,038	17,850	618,368	21,889	622,401	94,250	1579,944
7,900	67967	7,874	1,000	258,627	41,924	11728,577	9206,950	0,775	133,849	134,278	4,142	17,405	602,700	21,547	606,837	94,371	1583,582
8,100	69856	8,074	1,000	258,604	41,928	11836,773	9218,090	0,777	133,858	134,121	4,246	16,982	587,746	21,228	591,987	94,485	1586,927
8,300	71747	8,275	1,000	258,576	41,931	11945,736	9228,264	0,779	133,862	133,950	4,349	16,580	573,403	20,929	577,748	94,590	1589,837
8,500	73640	8,476	1,000	258,545	41,935	12055,580	9237,599	0,781	133,862	133,764	4,453	16,196	559,641	20,649	564,089	94,685	1592,357
8,700	75535	8,676	1,000	258,510	41,937	12165,540	9247,486	0,782	133,856	133,579	4,556	15,831	546,699	20,387	551,251	94,787	1595,319
8,900	77432	8,877	1,000	258,468	41,940	12273,722	9259,289	0,784	133,847	133,412	4,660	15,485	534,726	20,144	539,381	94,908	1599,359
9,100	79332	9,078	1,000	258,420	41,943	12382,374	9270,710	0,785	133,834	133,237	4,763	15,155	523,249	19,917	528,008	95,025	1603,227
9,300	81234	9,278	1,000	258,370	41,945	12491,614	9282,135	0,787	133,817	133,052	4,866	14,839	512,315	19,705	517,177	95,142	1607,176
9,500	83138	9,479	1,000	258,314	41,948	12601,370	9293,194	0,789	133,797	132,859	4,970	14,537	501,814	19,507	506,780	95,255	1610,970

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPC) tonne/cm	MTc tonne.m
9,700	85045	9,680	1,000	258,253	41,950	12711,861	9303,974	0,790	133,773	132,655	5,073	14,248	491,737	19,321	496,806	95,366	1614,664
9,900	86954	9,881	1,000	258,187	41,952	12823,050	9314,595	0,792	133,746	132,442	5,176	13,971	482,069	19,148	487,242	95,475	1618,303
10,100	88865	10,082	1,000	258,117	41,954	12934,939	9324,820	0,793	133,715	132,220	5,280	13,706	472,741	18,986	478,017	95,579	1621,735
10,300	90778	10,283	1,000	258,045	41,955	13047,805	9334,867	0,795	133,680	131,986	5,383	13,453	463,773	18,836	469,152	95,682	1625,102
10,500	92693	10,484	1,000	257,973	41,957	13160,753	9344,705	0,796	133,642	131,745	5,486	13,209	455,139	18,695	460,621	95,783	1628,388
10,700	94610	10,685	1,000	257,905	41,958	13274,550	9354,019	0,798	133,601	131,490	5,590	12,976	446,756	18,565	452,342	95,879	1631,360
10,900	96529	10,886	1,000	257,848	41,960	13388,035	9364,725	0,799	133,556	131,247	5,693	12,752	438,907	18,445	444,597	95,988	1635,143
11,100	98451	11,086	1,000	257,824	41,961	13500,626	9378,038	0,800	133,508	131,029	5,796	12,538	431,750	18,334	437,543	96,125	1640,476
11,300	100375	11,287	1,000	257,881	41,962	13582,852	9391,885	0,801	133,458	130,805	5,900	12,332	424,950	18,232	430,847	96,267	1646,187
11,500	102302	11,488	1,000	258,179	41,963	13695,628	9406,712	0,801	133,406	130,571	6,004	12,134	418,552	18,138	424,553	96,419	1652,548
11,700	104232	11,689	1,000	261,236	41,964	13808,989	9423,736	0,793	133,351	130,323	6,107	11,944	412,737	18,051	418,841	96,593	1660,386
11,900	106166	11,890	1,000	260,647	41,966	13923,560	9441,820	0,796	133,294	130,053	6,211	11,761	407,286	17,972	413,493	96,779	1668,934
12,100	108103	12,091	1,000	258,837	41,967	14037,194	9462,497	0,803	133,233	129,804	6,314	11,585	402,390	17,899	408,701	96,991	1679,083
12,300	110045	12,292	1,000	258,859	41,968	14149,504	9485,185	0,804	133,171	129,569	6,418	11,416	397,944	17,834	404,359	97,223	1690,515
12,500	111992	12,493	1,000	258,883	41,968	14262,101	9508,306	0,805	133,106	129,333	6,522	11,253	393,689	17,774	400,208	97,460	1702,197
12,700	113944	12,694	1,000	258,906	41,969	14374,968	9531,833	0,806	133,040	129,095	6,626	11,095	389,607	17,721	396,230	97,701	1714,090
12,900	115900	12,895	1,000	258,930	41,970	14488,053	9555,717	0,807	132,971	128,855	6,730	10,944	385,684	17,674	392,411	97,946	1726,167
13,100	117861	13,096	1,000	258,955	41,971	14601,395	9579,989	0,808	132,901	128,615	6,834	10,799	381,912	17,633	388,743	98,195	1738,431
13,300	119828	13,297	1,000	258,980	41,972	14714,944	9604,487	0,809	132,829	128,374	6,938	10,658	378,272	17,597	385,208	98,446	1750,825
13,500	121799	13,498	1,000	259,004	41,972	14828,687	9629,277	0,810	132,755	128,132	7,043	10,523	374,761	17,566	381,801	98,700	1763,363
13,700	123775	13,699	1,000	259,029	41,973	14942,631	9654,233	0,811	132,679	127,890	7,148	10,394	371,355	17,541	378,499	98,956	1775,954
13,900	125757	13,900	1,000	259,053	41,973	15057,381	9679,372	0,812	132,602	127,646	7,252	10,269	368,048	17,521	375,297	99,214	1788,598
14,100	127744	14,101	1,000	259,078	41,974	15172,032	9704,765	0,813	132,523	127,403	7,357	10,148	364,847	17,506	372,202	99,474	1801,353



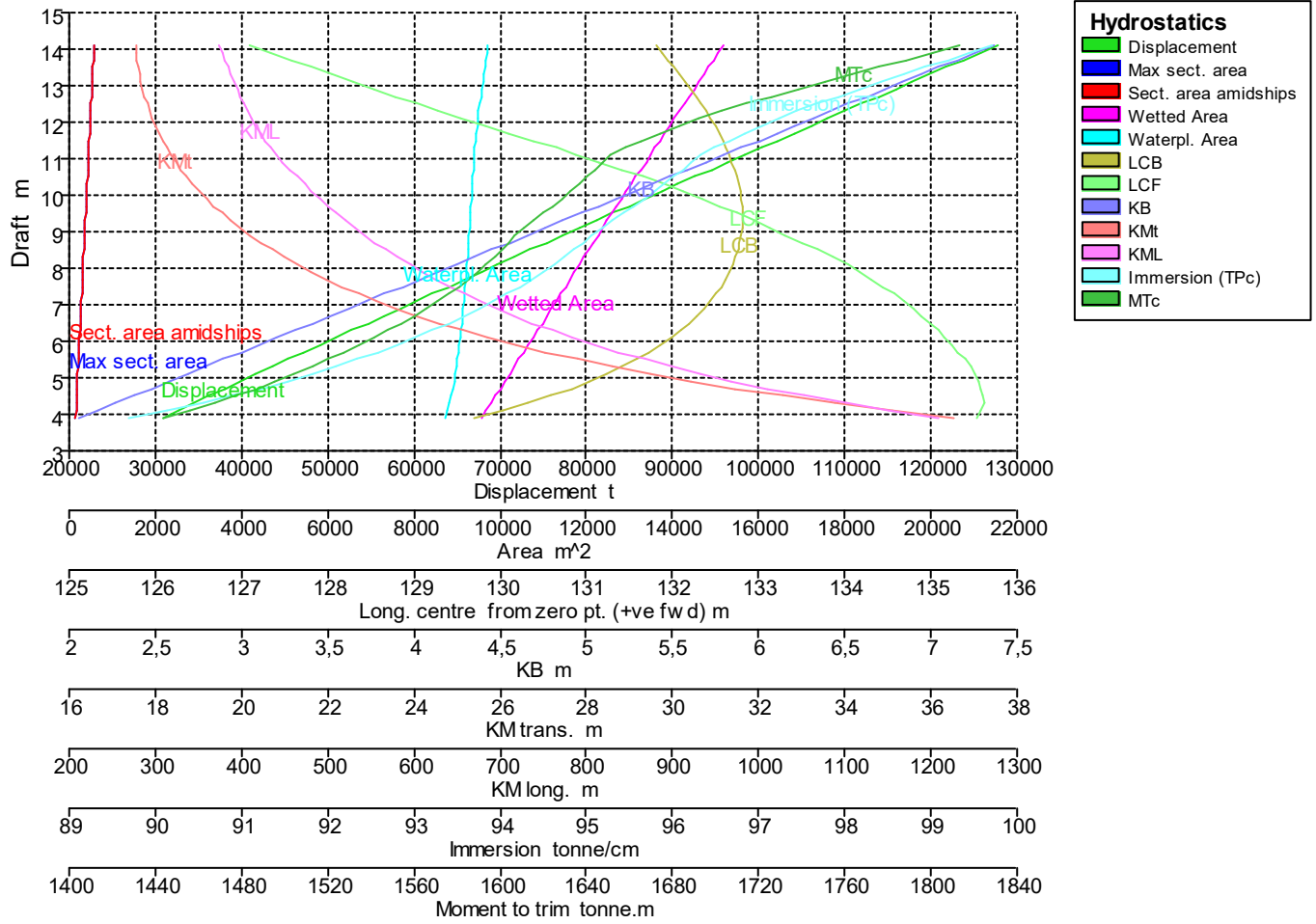
Fixed Trim = 1,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	30807	3,853	1,500	258,028	41,466	9555,225	8750,868	0,725	129,708	135,541	2,060	34,483	1205,793	36,542	1207,832	89,696	1443,553
4,100	32605	4,053	1,500	258,274	41,540	9670,692	8794,613	0,727	130,031	135,585	2,164	32,934	1149,713	35,098	1151,858	90,145	1456,298
4,300	34413	4,253	1,500	258,494	41,599	9784,687	8834,391	0,730	130,323	135,612	2,269	31,508	1098,500	33,776	1100,750	90,553	1468,081
4,500	36227	4,453	1,500	258,695	41,653	9895,403	8868,586	0,733	130,588	135,589	2,373	30,187	1050,674	32,560	1053,029	90,903	1477,735
4,700	38049	4,653	1,500	258,877	41,695	10005,879	8900,584	0,735	130,827	135,575	2,478	28,967	1007,038	31,444	1009,498	91,231	1487,102
4,900	39876	4,853	1,500	259,042	41,732	10115,431	8930,020	0,738	131,044	135,550	2,582	27,838	966,723	30,419	969,288	91,533	1495,675
5,100	41710	5,053	1,500	259,053	41,763	10224,270	8958,396	0,741	131,242	135,511	2,686	26,791	929,909	29,477	932,579	91,824	1504,418
5,300	43549	5,254	1,500	258,986	41,789	10332,388	8984,881	0,744	131,423	135,455	2,790	25,816	895,827	28,606	898,602	92,095	1512,744
5,500	45393	5,454	1,500	258,944	41,813	10440,104	9009,741	0,747	131,587	135,395	2,894	24,908	864,156	27,802	867,035	92,350	1520,635
5,700	47242	5,654	1,500	258,918	41,830	10547,547	9032,370	0,749	131,734	135,319	2,999	24,057	834,463	27,056	837,447	92,582	1527,791
5,900	49096	5,855	1,500	258,893	41,847	10655,670	9053,834	0,752	131,868	135,237	3,103	23,263	806,746	26,365	809,835	92,802	1534,608
6,100	50954	6,055	1,500	258,872	41,860	10763,284	9074,489	0,754	131,989	135,162	3,207	22,517	780,955	25,723	784,148	93,014	1541,389
6,300	52817	6,256	1,500	258,851	41,871	10870,712	9094,232	0,757	132,099	135,079	3,311	21,818	756,787	25,128	760,085	93,216	1547,909
6,500	54683	6,456	1,500	258,827	41,882	10977,964	9113,054	0,759	132,198	134,989	3,414	21,160	734,102	24,574	737,504	93,409	1554,206
6,700	56554	6,657	1,500	258,798	41,890	11085,139	9130,795	0,762	132,289	134,895	3,518	20,540	712,705	24,058	716,211	93,591	1560,158
6,900	58427	6,857	1,500	258,762	41,897	11191,904	9147,526	0,764	132,370	134,793	3,622	19,954	692,480	23,576	696,091	93,762	1565,766
7,100	60304	7,058	1,500	258,733	41,904	11298,863	9163,681	0,766	132,443	134,685	3,726	19,402	673,398	23,127	677,113	93,928	1571,207
7,300	62185	7,259	1,500	258,717	41,909	11405,930	9178,791	0,768	132,509	134,567	3,830	18,878	655,284	22,707	659,102	94,083	1576,295
7,500	64068	7,459	1,500	258,701	41,914	11513,008	9193,218	0,770	132,567	134,445	3,934	18,382	638,100	22,315	642,023	94,230	1581,141
7,700	65954	7,660	1,500	258,686	41,919	11620,282	9206,715	0,772	132,618	134,316	4,037	17,911	621,699	21,948	625,726	94,369	1585,558
7,900	67843	7,861	1,500	258,681	41,923	11727,754	9219,628	0,774	132,663	134,178	4,141	17,464	606,112	21,605	610,243	94,501	1589,793
8,100	69735	8,062	1,500	258,669	41,926	11835,676	9231,704	0,776	132,702	134,030	4,245	17,039	591,220	21,284	595,455	94,625	1593,693
8,300	71629	8,263	1,500	258,654	41,930	11944,073	9243,441	0,777	132,734	133,869	4,348	16,635	577,060	20,983	581,399	94,745	1597,510
8,500	73525	8,464	1,500	258,634	41,934	12053,292	9254,233	0,779	132,761	133,693	4,452	16,250	563,454	20,701	567,896	94,856	1600,884
8,700	75424	8,665	1,500	258,612	41,937	12163,289	9264,320	0,781	132,781	133,502	4,555	15,882	550,416	20,437	554,962	94,959	1603,979
8,900	77324	8,866	1,500	258,583	41,939	12274,086	9273,655	0,782	132,796	133,298	4,659	15,532	537,882	20,190	542,531	95,055	1606,715
9,100	79227	9,067	1,500	258,552	41,942	12382,729	9286,528	0,784	132,805	133,129	4,762	15,200	526,588	19,962	531,342	95,187	1611,500
9,300	81132	9,268	1,500	258,518	41,945	12491,767	9298,672	0,786	132,810	132,948	4,866	14,883	515,671	19,748	520,528	95,311	1615,863
9,500	83040	9,469	1,500	258,481	41,947	12601,365	9310,656	0,787	132,810	132,757	4,969	14,579	505,238	19,548	510,199	95,434	1620,236

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
9,700	84950	9,671	1,500	258,442	41,949	12711,629	9322,433	0,789	132,806	132,556	5,073	14,289	495,232	19,361	500,297	95,555	1624,533
9,900	86863	9,872	1,500	258,402	41,951	12822,443	9333,857	0,790	132,798	132,348	5,176	14,011	485,600	19,187	490,768	95,672	1628,665
10,100	88778	10,073	1,500	258,363	41,953	12934,127	9345,239	0,792	132,785	132,128	5,280	13,745	476,366	19,024	481,637	95,789	1632,795
10,300	90696	10,274	1,500	258,330	41,955	13046,504	9356,166	0,793	132,769	131,900	5,383	13,490	467,438	18,872	472,813	95,901	1636,687
10,500	92615	10,476	1,500	258,308	41,956	13159,888	9366,856	0,794	132,747	131,659	5,487	13,245	458,838	18,731	464,317	96,010	1640,482
10,700	94537	10,677	1,500	258,309	41,958	13273,566	9377,481	0,796	132,722	131,415	5,590	13,010	450,567	18,600	456,149	96,119	1644,252
10,900	96461	10,879	1,500	258,362	41,959	13387,957	9387,545	0,797	132,693	131,153	5,694	12,786	442,515	18,479	448,201	96,222	1647,660
11,100	98387	11,080	1,500	258,543	41,961	13471,779	9398,467	0,797	132,660	130,884	5,798	12,570	434,905	18,368	440,695	96,334	1651,602
11,300	100315	11,282	1,500	259,107	41,962	13584,336	9413,368	0,797	132,624	130,645	5,901	12,364	428,195	18,265	434,089	96,487	1657,992
11,500	102246	11,483	1,500	262,011	41,963	13699,400	9430,302	0,789	132,584	130,380	6,005	12,165	422,070	18,170	428,068	96,661	1665,782
11,700	104182	11,685	1,500	261,702	41,964	13815,623	9448,212	0,791	132,541	130,104	6,108	11,975	416,306	18,083	422,407	96,844	1674,190
11,900	106120	11,887	1,500	261,323	41,965	13931,605	9467,183	0,794	132,494	129,828	6,212	11,791	410,891	18,003	417,096	97,039	1683,247
12,100	108063	12,088	1,500	260,811	41,966	14047,063	9486,357	0,796	132,443	129,545	6,316	11,615	405,677	17,931	411,986	97,235	1692,416
12,300	110010	12,290	1,500	258,817	41,967	14161,934	9507,065	0,804	132,390	129,275	6,420	11,445	400,852	17,865	407,265	97,447	1702,540
12,500	111961	12,491	1,500	258,842	41,968	14274,826	9530,433	0,805	132,333	129,033	6,524	11,282	396,551	17,806	403,068	97,687	1714,318
12,700	113917	12,693	1,500	258,868	41,969	14387,933	9554,155	0,806	132,275	128,791	6,628	11,125	392,418	17,753	399,039	97,930	1726,276
12,900	115878	12,894	1,500	258,893	41,970	14501,266	9578,253	0,807	132,214	128,547	6,732	10,974	388,445	17,706	395,170	98,177	1738,414
13,100	117844	13,096	1,500	258,919	41,971	14614,774	9602,667	0,808	132,151	128,304	6,837	10,829	384,617	17,665	391,447	98,427	1750,708
13,300	119815	13,297	1,500	258,944	41,972	14728,481	9627,330	0,809	132,086	128,060	6,941	10,689	380,926	17,630	387,861	98,680	1763,141
13,500	121791	13,498	1,500	258,970	41,972	14842,355	9652,212	0,810	132,018	127,816	7,046	10,554	377,355	17,600	384,395	98,935	1775,670
13,700	123772	13,700	1,500	258,995	41,973	14956,381	9677,369	0,811	131,949	127,572	7,151	10,424	373,904	17,575	381,048	99,193	1788,314
13,900	125758	13,901	1,500	259,020	41,973	15070,501	9702,713	0,812	131,878	127,329	7,256	10,300	370,555	17,556	377,805	99,453	1801,020
14,100	127750	14,103	1,500	259,045	41,974	15185,331	9728,095	0,813	131,806	127,085	7,361	10,180	367,286	17,541	374,641	99,713	1813,695



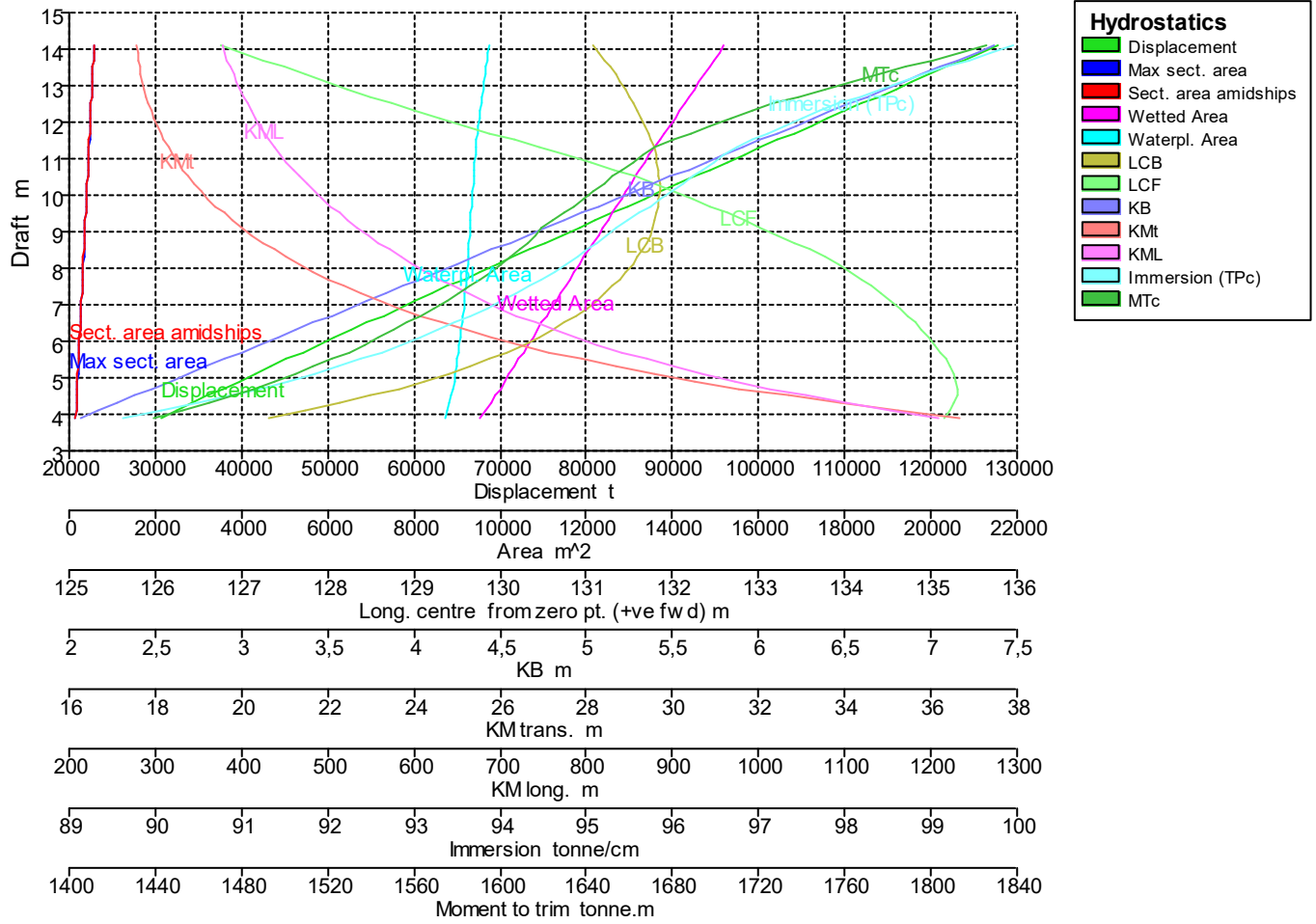
Fixed Trim = 2 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	30670	3,840	2,000	257,682	41,441	9547,516	8742,975	0,723	127,313	135,157	2,068	34,607	1207,728	36,674	1209,759	89,615	1439,452
4,100	32467	4,040	2,000	257,958	41,518	9663,103	8787,207	0,725	127,748	135,215	2,172	33,050	1151,466	35,221	1153,603	90,069	1452,326
4,300	34272	4,239	2,000	258,208	41,580	9777,893	8828,598	0,728	128,143	135,267	2,275	31,621	1100,513	33,896	1102,754	90,493	1464,792
4,500	36086	4,439	2,000	258,436	41,635	9891,565	8867,073	0,731	128,503	135,315	2,379	30,310	1053,827	32,688	1056,174	90,888	1476,429
4,700	37907	4,639	2,000	258,644	41,681	10001,541	8898,907	0,733	128,832	135,307	2,483	29,082	1009,725	31,564	1012,177	91,214	1485,559
4,900	39735	4,839	2,000	258,653	41,718	10111,376	8930,677	0,736	129,130	135,289	2,587	27,950	969,984	30,536	972,541	91,539	1495,432
5,100	41568	5,040	2,000	258,638	41,753	10220,336	8959,935	0,739	129,402	135,257	2,691	26,897	933,211	29,586	935,873	91,839	1504,686
5,300	43407	5,240	2,000	258,644	41,779	10328,780	8987,480	0,742	129,651	135,221	2,794	25,918	899,164	28,711	901,931	92,122	1513,510
5,500	45252	5,440	2,000	258,661	41,805	10437,480	9013,120	0,745	129,877	135,172	2,898	25,004	867,458	27,902	870,329	92,384	1521,789
5,700	47103	5,641	2,000	258,685	41,823	10546,090	9037,110	0,748	130,083	135,116	3,002	24,150	837,906	27,151	840,882	92,630	1529,645
5,900	48958	5,841	2,000	258,705	41,841	10653,948	9059,263	0,750	130,272	135,049	3,106	23,351	810,134	26,456	813,215	92,857	1536,792
6,100	50817	6,042	2,000	258,723	41,856	10762,068	9079,922	0,753	130,445	134,972	3,209	22,600	784,136	25,809	787,321	93,069	1543,581
6,300	52681	6,242	2,000	258,738	41,867	10869,837	9100,262	0,755	130,603	134,895	3,313	21,897	759,955	25,209	763,245	93,278	1550,470
6,500	54549	6,443	2,000	258,750	41,878	10977,323	9119,651	0,758	130,748	134,816	3,417	21,236	737,211	24,652	740,605	93,476	1557,029
6,700	56420	6,644	2,000	258,752	41,887	11084,628	9137,969	0,760	130,881	134,729	3,521	20,612	715,795	24,132	719,294	93,664	1563,319
6,900	58296	6,844	2,000	258,745	41,894	11191,912	9155,652	0,762	131,003	134,637	3,624	20,024	695,640	23,647	699,243	93,845	1569,461
7,100	60174	7,045	2,000	258,732	41,901	11298,871	9172,382	0,764	131,114	134,535	3,728	19,468	676,538	23,195	680,246	94,017	1575,233
7,300	62057	7,246	2,000	258,716	41,907	11405,914	9188,354	0,766	131,216	134,429	3,832	18,942	658,466	22,773	662,277	94,181	1580,795
7,500	63942	7,447	2,000	258,717	41,912	11512,994	9203,275	0,768	131,308	134,316	3,935	18,444	641,234	22,378	645,149	94,334	1585,890
7,700	65830	7,648	2,000	258,725	41,917	11620,168	9217,703	0,770	131,392	134,193	4,039	17,971	624,901	22,009	628,921	94,481	1590,846
7,900	67722	7,849	2,000	258,728	41,922	11727,595	9231,475	0,772	131,468	134,063	4,143	17,522	609,361	21,664	613,484	94,623	1595,572
8,100	69616	8,050	2,000	258,730	41,925	11835,369	9244,845	0,774	131,536	133,919	4,246	17,095	594,615	21,341	598,843	94,760	1600,243
8,300	71513	8,251	2,000	258,724	41,929	11943,547	9257,609	0,776	131,597	133,765	4,350	16,689	580,533	21,038	584,865	94,890	1604,660
8,500	73412	8,453	2,000	258,718	41,933	12052,242	9269,935	0,778	131,650	133,599	4,453	16,302	567,101	20,755	571,537	95,017	1608,924
8,700	75314	8,654	2,000	258,707	41,936	12161,697	9281,370	0,779	131,697	133,418	4,557	15,933	554,192	20,490	558,732	95,134	1612,801
8,900	77218	8,856	2,000	258,694	41,938	12271,936	9292,279	0,781	131,736	133,223	4,660	15,581	541,833	20,241	546,477	95,246	1616,481
9,100	79124	9,057	2,000	258,679	41,941	12383,373	9301,950	0,783	131,769	133,008	4,764	15,245	529,838	20,008	534,585	95,345	1619,503
9,300	81033	9,259	2,000	258,661	41,944	12492,780	9315,117	0,784	131,795	132,829	4,867	14,926	519,021	19,793	523,872	95,480	1624,535
9,500	82944	9,460	2,000	258,646	41,946	12602,320	9327,962	0,786	131,816	132,640	4,971	14,621	508,635	19,592	513,590	95,612	1629,421

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPC) tonne/cm	MTc tonne.m
9,700	84858	9,662	2,000	258,630	41,948	12712,343	9340,512	0,787	131,832	132,443	5,074	14,330	498,665	19,404	503,724	95,740	1634,198
9,900	86774	9,863	2,000	258,619	41,950	12823,126	9352,962	0,789	131,843	132,236	5,178	14,051	489,108	19,228	494,271	95,868	1638,952
10,100	88694	10,065	2,000	258,616	41,952	12934,458	9365,214	0,790	131,848	132,021	5,281	13,783	479,914	19,064	485,181	95,993	1643,594
10,300	90615	10,267	2,000	258,629	41,954	13046,667	9377,191	0,791	131,849	131,796	5,385	13,527	471,062	18,912	476,433	96,116	1648,127
10,500	92539	10,469	2,000	258,681	41,956	13159,643	9388,802	0,793	131,845	131,562	5,489	13,281	462,510	18,770	467,984	96,235	1652,473
10,700	94466	10,670	2,000	258,799	41,957	13243,355	9400,263	0,794	131,836	131,316	5,593	13,046	454,267	18,638	459,846	96,353	1656,735
10,900	96394	10,873	2,000	259,084	41,959	13356,887	9412,389	0,794	131,823	131,056	5,696	12,820	446,461	18,516	452,143	96,477	1661,444
11,100	98324	11,075	2,000	262,744	41,960	13471,469	9424,378	0,784	131,805	130,771	5,800	12,604	438,929	18,404	444,716	96,600	1666,092
11,300	100258	11,277	2,000	262,534	41,962	13589,203	9437,931	0,786	131,782	130,450	5,904	12,396	431,963	18,299	437,854	96,739	1671,884
11,500	102194	11,479	2,000	262,315	41,963	13705,434	9455,681	0,788	131,754	130,168	6,008	12,197	425,871	18,204	431,866	96,921	1680,188
11,700	104135	11,682	2,000	262,066	41,964	13821,837	9474,190	0,790	131,722	129,883	6,112	12,006	420,096	18,117	426,195	97,110	1688,938
11,900	106079	11,884	2,000	261,775	41,965	13938,824	9493,147	0,792	131,686	129,594	6,216	11,822	414,570	18,037	420,773	97,305	1697,921
12,100	108027	12,086	2,000	261,427	41,966	14055,681	9512,797	0,794	131,646	129,308	6,320	11,645	409,323	17,965	415,630	97,506	1707,321
12,300	109979	12,288	2,000	260,964	41,967	14171,722	9532,679	0,797	131,602	129,019	6,424	11,476	404,277	17,899	410,688	97,710	1716,863
12,500	111935	12,491	2,000	260,159	41,968	14287,488	9553,457	0,800	131,555	128,737	6,528	11,312	399,505	17,840	406,021	97,923	1726,920
12,700	113896	12,693	2,000	258,830	41,969	14401,197	9577,017	0,806	131,504	128,485	6,632	11,155	395,264	17,787	401,884	98,164	1738,695
12,900	115861	12,895	2,000	258,857	41,970	14514,723	9601,258	0,807	131,451	128,239	6,737	11,005	391,230	17,741	397,954	98,413	1750,853
13,100	117832	13,097	2,000	258,883	41,971	14628,418	9625,781	0,808	131,395	127,992	6,841	10,859	387,342	17,700	394,171	98,664	1763,155
13,300	119808	13,298	2,000	258,910	41,972	14742,247	9650,522	0,809	131,337	127,746	6,946	10,720	383,587	17,665	390,522	98,918	1775,574
13,500	121788	13,500	2,000	258,936	41,972	14856,217	9675,524	0,810	131,277	127,500	7,051	10,585	379,958	17,636	386,997	99,174	1788,099
13,700	123774	13,702	2,000	258,962	41,973	14970,335	9700,738	0,811	131,214	127,255	7,156	10,456	376,442	17,612	383,587	99,433	1800,706
13,900	125765	13,904	2,000	258,988	41,973	15084,541	9726,136	0,812	131,150	127,011	7,262	10,332	373,033	17,593	380,283	99,693	1813,379
14,100	127762	14,106	2,000	259,013	41,974	15198,801	9751,650	0,813	131,084	126,768	7,367	10,213	369,718	17,579	377,073	99,954	1826,087



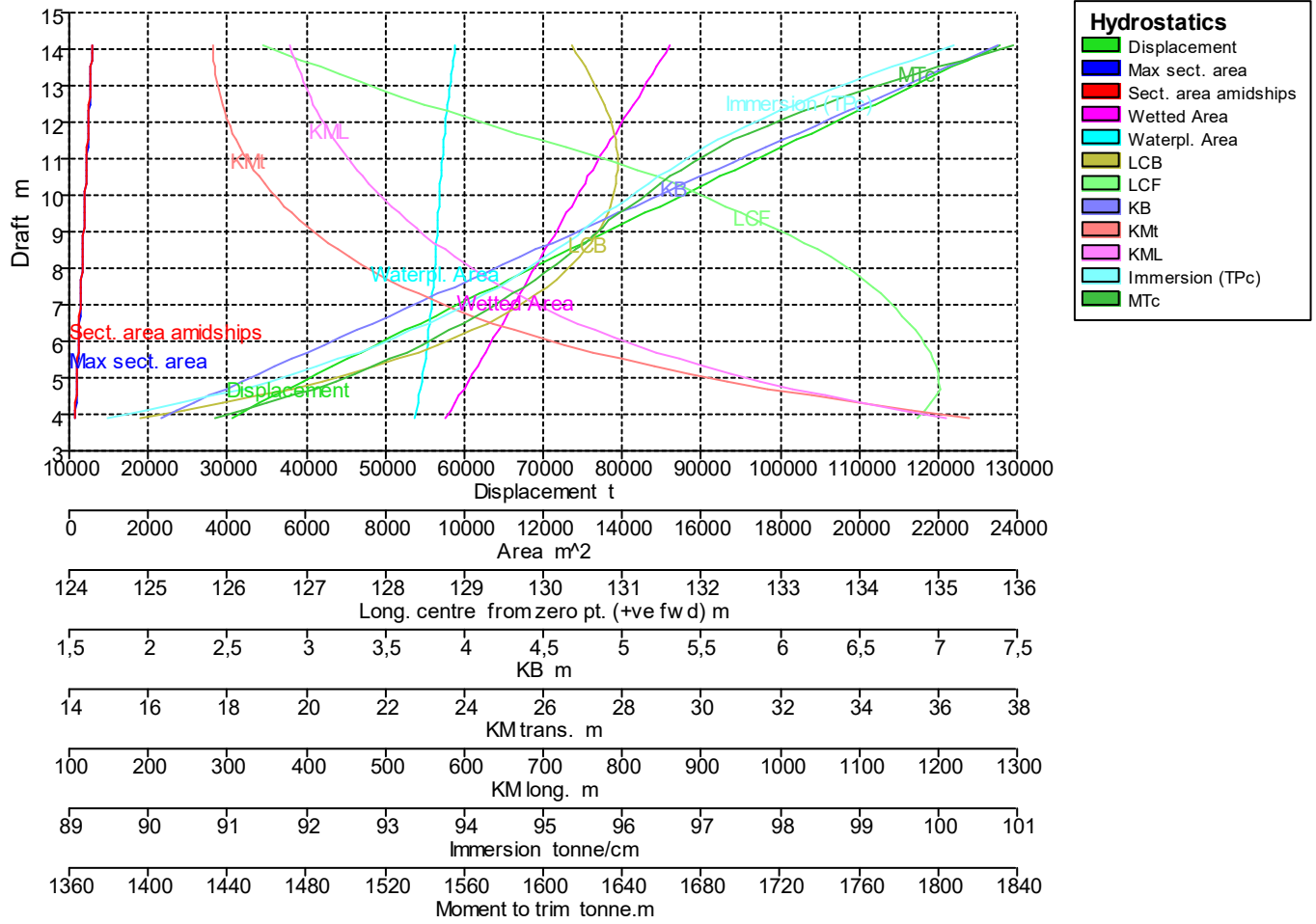
Fixed Trim = 2,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	30540	3,830	2,500	257,298	41,419	9537,363	8731,122	0,721	124,909	134,732	2,082	34,701	1207,922	36,781	1209,946	89,494	1433,576
4,100	32334	4,029	2,500	257,605	41,495	9655,069	8778,674	0,723	125,457	134,838	2,184	33,155	1152,626	35,337	1154,754	89,981	1447,877
4,300	34138	4,228	2,500	257,886	41,563	9769,864	8820,467	0,726	125,955	134,911	2,287	31,722	1101,493	34,007	1103,727	90,410	1460,366
4,500	35950	4,427	2,500	258,132	41,619	9883,869	8859,889	0,729	126,409	134,977	2,390	30,406	1054,919	32,794	1057,258	90,814	1472,396
4,700	37770	4,627	2,500	258,150	41,667	9997,074	8898,157	0,732	126,825	135,022	2,493	29,191	1012,875	31,683	1015,319	91,206	1484,844
4,900	39598	4,827	2,500	258,197	41,707	10107,152	8930,611	0,735	127,205	135,015	2,596	28,054	973,048	30,648	975,597	91,539	1495,021
5,100	41431	5,027	2,500	258,253	41,742	10215,900	8960,348	0,738	127,551	134,994	2,699	26,996	936,102	29,694	938,756	91,844	1504,411
5,300	43271	5,227	2,500	258,316	41,770	10325,704	8988,764	0,741	127,867	134,969	2,802	26,013	902,047	28,814	904,806	92,135	1513,637
5,500	45116	5,428	2,500	258,384	41,797	10435,003	9015,374	0,744	128,156	134,937	2,905	25,096	870,385	28,000	873,249	92,408	1522,387
5,700	46967	5,628	2,500	258,451	41,817	10543,904	9040,200	0,746	128,422	134,896	3,009	24,238	840,836	27,246	843,804	92,662	1530,634
5,900	48823	5,829	2,500	258,511	41,834	10652,506	9063,584	0,749	128,666	134,844	3,112	23,435	813,222	26,546	816,295	92,902	1538,467
6,100	50684	6,029	2,500	258,566	41,851	10760,453	9085,491	0,751	128,892	134,780	3,216	22,683	787,330	25,897	790,508	93,126	1545,863
6,300	52548	6,230	2,500	258,616	41,863	10868,635	9105,631	0,754	129,099	134,707	3,319	21,973	762,916	25,291	766,198	93,333	1552,663
6,500	54417	6,431	2,500	258,660	41,874	10976,502	9125,483	0,756	129,290	134,632	3,422	21,309	740,120	24,730	743,507	93,536	1559,479
6,700	56290	6,631	2,500	258,693	41,885	11084,119	9144,619	0,758	129,465	134,553	3,526	20,682	718,752	24,207	722,243	93,732	1566,233
6,900	58167	6,832	2,500	258,715	41,891	11191,589	9162,867	0,761	129,628	134,467	3,629	20,091	698,569	23,719	702,164	93,919	1572,669
7,100	60047	7,033	2,500	258,729	41,899	11298,944	9180,409	0,763	129,777	134,377	3,733	19,533	679,500	23,265	683,200	94,099	1578,871
7,300	61931	7,234	2,500	258,742	41,906	11405,977	9196,861	0,765	129,915	134,279	3,836	19,005	661,386	22,840	665,191	94,268	1584,686
7,500	63818	7,435	2,500	258,746	41,911	11513,145	9212,820	0,767	130,042	134,173	3,940	18,504	644,259	22,443	648,168	94,431	1590,390
7,700	65709	7,636	2,500	258,758	41,916	11620,429	9228,108	0,769	130,159	134,057	4,043	18,030	627,976	22,072	631,989	94,588	1595,827
7,900	67602	7,837	2,500	258,772	41,921	11727,950	9243,013	0,771	130,265	133,928	4,147	17,579	612,561	21,725	616,679	94,741	1601,241
8,100	69499	8,039	2,500	258,783	41,924	11835,684	9257,373	0,773	130,363	133,791	4,250	17,150	597,890	21,400	602,112	94,888	1606,479
8,300	71398	8,240	2,500	258,791	41,928	11943,762	9271,222	0,774	130,452	133,643	4,354	16,742	583,909	21,095	588,234	95,030	1611,544
8,500	73301	8,442	2,500	258,796	41,932	12052,303	9284,752	0,776	130,532	133,483	4,457	16,355	570,586	20,811	575,016	95,169	1616,499
8,700	75206	8,644	2,500	258,799	41,935	12161,386	9297,637	0,778	130,604	133,310	4,561	15,984	557,837	20,544	562,371	95,301	1621,233
8,900	77113	8,845	2,500	258,802	41,938	12271,111	9309,798	0,780	130,668	133,125	4,664	15,630	545,586	20,294	550,223	95,425	1625,635
9,100	79023	9,047	2,500	258,803	41,940	12381,672	9321,533	0,781	130,724	132,925	4,768	15,293	533,846	20,060	538,588	95,546	1629,858
9,300	80936	9,249	2,500	258,805	41,943	12493,525	9332,066	0,783	130,773	132,705	4,871	14,971	522,439	19,841	527,285	95,654	1633,439
9,500	82850	9,451	2,500	258,812	41,946	12604,068	9345,058	0,784	130,814	132,510	4,975	14,664	511,998	19,638	516,948	95,787	1638,506

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPC) tonne/cm	MTc tonne.m
9,700	84768	9,653	2,500	258,824	41,948	12714,114	9358,508	0,786	130,850	132,315	5,078	14,371	502,083	19,448	507,137	95,925	1643,826
9,900	86688	9,855	2,500	258,848	41,950	12824,731	9371,808	0,787	130,879	132,112	5,182	14,091	492,569	19,272	497,727	96,061	1649,085
10,100	88611	10,057	2,500	258,897	41,952	12936,046	9384,935	0,789	130,903	131,899	5,285	13,822	483,421	19,107	488,683	96,196	1654,254
10,300	90537	10,260	2,500	258,984	41,954	13048,030	9397,823	0,790	130,921	131,678	5,389	13,565	474,620	18,954	479,986	96,328	1659,337
10,500	92465	10,462	2,500	259,167	41,955	13130,321	9410,569	0,791	130,934	131,445	5,493	13,318	466,156	18,811	471,627	96,458	1664,376
10,700	94395	10,664	2,500	259,566	41,957	13243,014	9423,742	0,791	130,942	131,194	5,597	13,082	458,105	18,679	463,680	96,593	1669,717
10,900	96328	10,867	2,500	263,083	41,958	13357,815	9437,787	0,781	130,945	130,918	5,701	12,856	450,522	18,556	456,202	96,737	1675,673
11,100	98265	11,070	2,500	262,924	41,960	13475,040	9453,212	0,783	130,941	130,618	5,805	12,638	443,474	18,442	449,257	96,895	1682,603
11,300	100204	11,273	2,500	262,755	41,961	13592,829	9468,125	0,785	130,932	130,296	5,909	12,429	436,600	18,337	442,487	97,048	1689,216
11,500	102146	11,476	2,500	262,570	41,962	13711,340	9483,074	0,787	130,917	129,962	6,013	12,229	429,967	18,241	435,959	97,202	1695,820
11,700	104092	11,679	2,500	262,363	41,964	13828,654	9500,926	0,789	130,896	129,657	6,117	12,038	423,983	18,154	430,079	97,384	1704,128
11,900	106042	11,882	2,500	262,128	41,965	13945,680	9520,198	0,791	130,871	129,364	6,221	11,854	418,394	18,074	424,595	97,582	1713,248
12,100	107995	12,085	2,500	261,855	41,966	14063,168	9539,776	0,793	130,841	129,068	6,325	11,677	413,029	18,001	419,334	97,783	1722,537
12,300	109953	12,288	2,500	261,522	41,967	14180,915	9559,694	0,795	130,807	128,774	6,430	11,507	407,879	17,936	414,289	97,987	1732,010
12,500	111915	12,491	2,500	261,097	41,968	14297,395	9580,281	0,797	130,769	128,482	6,534	11,344	402,978	17,877	409,492	98,198	1741,864
12,700	113881	12,694	2,500	260,451	41,969	14413,778	9601,258	0,800	130,727	128,192	6,638	11,187	398,268	17,825	404,887	98,413	1751,901
12,900	115851	12,896	2,500	258,822	41,970	14528,398	9624,711	0,807	130,682	127,930	6,743	11,036	394,036	17,779	400,760	98,653	1763,469
13,100	117826	13,099	2,500	258,849	41,971	14642,237	9649,263	0,808	130,634	127,681	6,848	10,891	390,077	17,739	396,906	98,905	1775,734
13,300	119807	13,301	2,500	258,876	41,971	14756,209	9674,104	0,809	130,583	127,433	6,953	10,752	386,259	17,704	393,193	99,160	1788,137
13,500	121792	13,504	2,500	258,903	41,972	14870,272	9699,142	0,810	130,530	127,186	7,058	10,618	382,560	17,676	389,600	99,416	1800,615
13,700	123783	13,706	2,500	258,930	41,973	14984,411	9724,375	0,811	130,475	126,940	7,163	10,489	378,976	17,652	386,121	99,675	1813,162
13,900	125779	13,908	2,500	258,956	41,973	15098,647	9749,774	0,812	130,417	126,695	7,269	10,366	375,498	17,634	382,749	99,935	1825,765
14,100	127780	14,111	2,500	258,983	41,974	15212,906	9775,206	0,813	130,357	126,453	7,374	10,246	372,112	17,620	379,468	100,196	1838,375



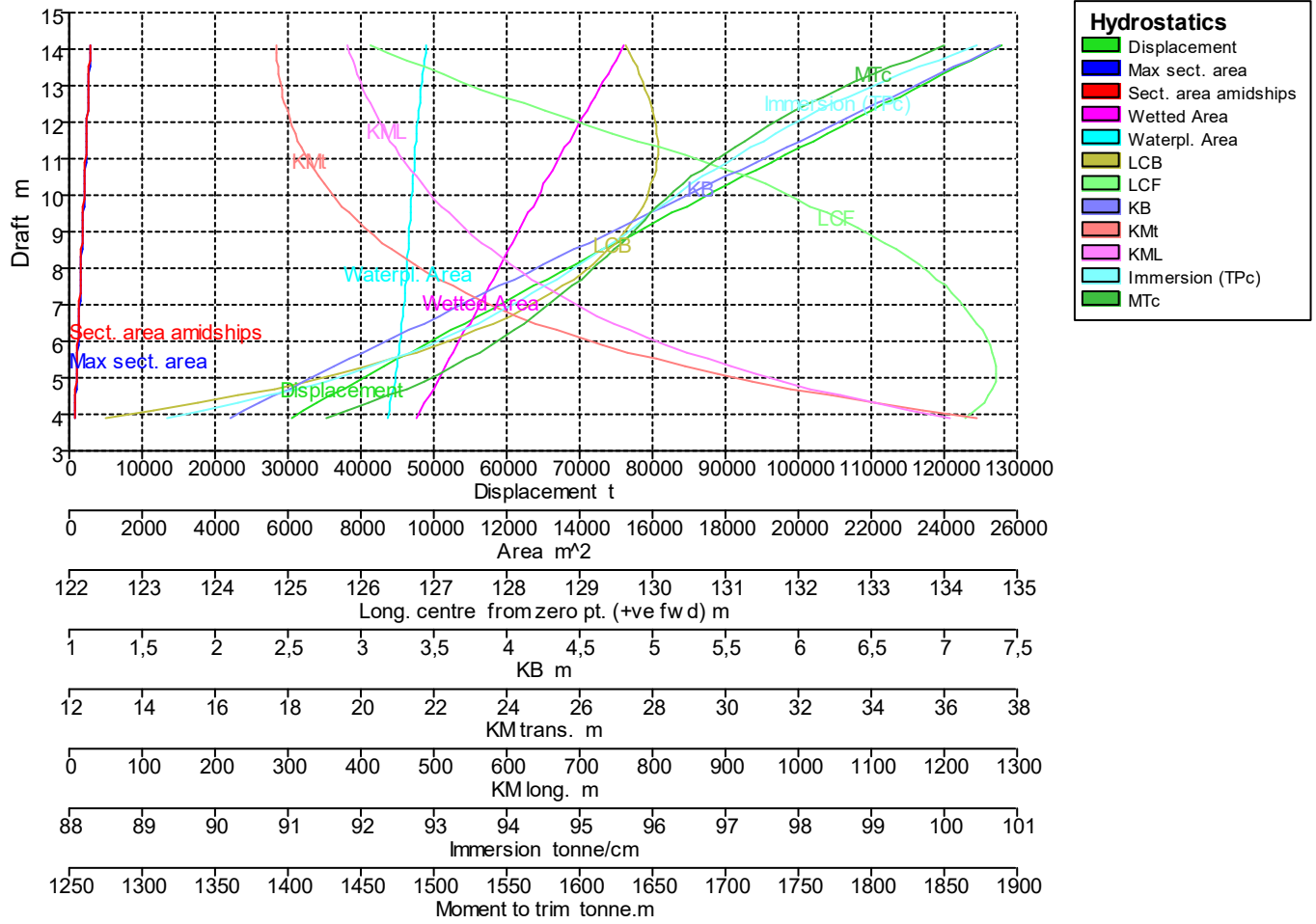
Fixed Trim = 3 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	30417	3,821	3,000	256,868	41,394	9526,010	8716,844	0,719	122,498	134,286	2,100	34,771	1207,019	36,869	1209,035	89,348	1426,722
4,100	32209	4,019	3,000	257,211	41,473	9644,264	8765,425	0,722	123,161	134,420	2,201	33,230	1151,807	35,429	1153,929	89,846	1441,216
4,300	34011	4,218	3,000	257,455	41,547	9761,139	8811,235	0,725	123,762	134,543	2,303	31,811	1101,978	34,111	1104,205	90,315	1455,536
4,500	35821	4,417	3,000	257,541	41,603	9875,224	8852,640	0,728	124,310	134,607	2,405	30,492	1056,044	32,894	1058,375	90,740	1468,657
4,700	37639	4,616	3,000	257,647	41,655	9988,496	8891,371	0,731	124,810	134,666	2,507	29,273	1013,944	31,777	1016,380	91,137	1481,252
4,900	39465	4,816	3,000	257,764	41,695	10101,597	8928,343	0,734	125,268	134,719	2,609	28,147	975,326	30,754	977,868	91,516	1493,544
5,100	41299	5,016	3,000	257,878	41,734	10212,702	8959,904	0,737	125,688	134,722	2,711	27,087	938,694	29,797	941,341	91,839	1503,815
5,300	43139	5,216	3,000	257,992	41,761	10322,359	8988,769	0,740	126,073	134,707	2,814	26,101	904,509	28,913	907,261	92,135	1513,184
5,500	44985	5,416	3,000	258,103	41,789	10432,128	9016,303	0,742	126,426	134,689	2,916	25,181	872,884	28,096	875,740	92,417	1522,343
5,700	46836	5,616	3,000	258,211	41,811	10541,419	9042,096	0,745	126,752	134,660	3,019	24,320	843,429	27,337	846,390	92,681	1531,104
5,900	48692	5,817	3,000	258,309	41,829	10650,435	9066,777	0,747	127,052	134,622	3,122	23,516	815,952	26,636	819,017	92,934	1539,544
6,100	50554	6,017	3,000	258,398	41,846	10759,063	9089,431	0,750	127,329	134,574	3,225	22,759	790,102	25,982	793,272	93,167	1547,373
6,300	52419	6,218	3,000	258,481	41,859	10867,550	9111,324	0,752	127,586	134,519	3,328	22,049	765,935	25,376	769,209	93,391	1555,040
6,500	54289	6,419	3,000	258,555	41,871	10975,406	9131,117	0,755	127,823	134,441	3,431	21,380	742,966	24,809	746,346	93,594	1561,858
6,700	56163	6,620	3,000	258,618	41,881	11083,448	9150,511	0,757	128,042	134,365	3,534	20,750	721,491	24,282	724,976	93,793	1568,725
6,900	58041	6,821	3,000	258,669	41,889	11191,125	9169,344	0,759	128,244	134,290	3,637	20,156	701,301	23,792	704,890	93,986	1575,481
7,100	59923	7,022	3,000	258,719	41,897	11298,663	9187,476	0,761	128,432	134,207	3,740	19,596	682,219	23,335	685,912	94,172	1581,984
7,300	61808	7,223	3,000	258,758	41,904	11406,167	9204,976	0,763	128,607	134,116	3,843	19,066	664,217	22,908	668,015	94,351	1588,396
7,500	63697	7,424	3,000	258,785	41,909	11513,488	9221,654	0,765	128,768	134,014	3,947	18,563	647,120	22,508	651,021	94,522	1594,510
7,700	65590	7,625	3,000	258,795	41,914	11621,028	9238,258	0,767	128,917	133,902	4,050	18,087	631,010	22,136	635,016	94,692	1600,731
7,900	67485	7,827	3,000	258,811	41,919	11728,671	9254,110	0,769	129,055	133,780	4,153	17,635	615,670	21,787	619,780	94,855	1606,690
8,100	69384	8,028	3,000	258,833	41,923	11836,492	9269,371	0,771	129,182	133,647	4,256	17,204	601,065	21,460	605,280	95,011	1612,461
8,300	71286	8,230	3,000	258,853	41,927	11944,660	9284,486	0,773	129,298	133,503	4,360	16,795	587,217	21,154	591,536	95,166	1618,256
8,500	73191	8,432	3,000	258,870	41,931	12053,155	9298,977	0,775	129,405	133,348	4,463	16,406	573,966	20,868	578,390	95,315	1623,785
8,700	75099	8,634	3,000	258,890	41,934	12162,046	9313,081	0,777	129,502	133,183	4,567	16,034	561,332	20,599	565,859	95,459	1629,228
8,900	77010	8,836	3,000	258,909	41,937	12271,602	9326,623	0,778	129,591	133,005	4,670	15,679	549,221	20,348	553,853	95,598	1634,439
9,100	78924	9,038	3,000	258,929	41,940	12381,729	9339,649	0,780	129,671	132,814	4,773	15,341	537,596	20,113	542,332	95,731	1639,408
9,300	80840	9,241	3,000	258,954	41,942	12492,786	9352,105	0,781	129,742	132,608	4,877	15,017	526,414	19,893	531,254	95,859	1644,107
9,500	82759	9,443	3,000	258,990	41,945	12604,928	9363,377	0,783	129,805	132,385	4,981	14,707	515,552	19,687	520,497	95,975	1648,231

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
9,700	84680	9,646	3,000	259,040	41,947	12716,759	9375,918	0,784	129,860	132,169	5,084	14,412	505,388	19,495	510,437	96,103	1653,095
9,900	86604	9,848	3,000	259,116	41,949	12827,359	9390,459	0,786	129,909	131,974	5,188	14,131	495,991	19,318	501,145	96,252	1659,108
10,100	88531	10,050	3,000	259,246	41,951	12938,674	9404,438	0,787	129,951	131,763	5,291	13,862	486,887	19,152	492,145	96,395	1664,787
10,300	90460	10,253	3,000	259,486	41,953	13019,790	9418,446	0,788	129,987	131,542	5,396	13,604	478,182	18,998	483,544	96,539	1670,571
10,500	92392	10,456	3,000	260,029	41,955	13131,666	9432,955	0,787	130,017	131,302	5,499	13,356	469,924	18,855	475,391	96,688	1676,723
10,700	94327	10,659	3,000	263,353	41,957	13246,065	9448,702	0,779	130,041	131,031	5,603	13,119	462,228	18,721	467,799	96,849	1683,772
10,900	96266	10,862	3,000	263,228	41,958	13362,163	9465,150	0,780	130,058	130,740	5,707	12,892	454,948	18,598	460,624	97,018	1691,298
11,100	98208	11,066	3,000	263,095	41,960	13479,458	9481,635	0,782	130,068	130,435	5,811	12,674	447,946	18,484	453,727	97,187	1698,862
11,300	100153	11,270	3,000	262,951	41,961	13597,481	9497,983	0,784	130,073	130,117	5,915	12,464	441,176	18,378	447,061	97,354	1706,340
11,500	102102	11,474	3,000	262,793	41,962	13715,836	9514,359	0,786	130,070	129,792	6,019	12,263	434,639	18,282	440,628	97,522	1713,792
11,700	104054	11,678	3,000	262,617	41,963	13834,778	9530,180	0,788	130,062	129,453	6,124	12,071	428,225	18,194	434,319	97,684	1720,818
11,900	106009	11,881	3,000	262,418	41,964	13953,197	9547,792	0,789	130,048	129,130	6,228	11,886	422,276	18,113	428,475	97,865	1728,867
12,100	107968	12,085	3,000	262,192	41,966	14070,656	9567,555	0,791	130,029	128,832	6,333	11,709	416,832	18,041	423,135	98,067	1738,216
12,300	109932	12,288	3,000	261,931	41,967	14188,502	9587,617	0,793	130,005	128,533	6,437	11,539	411,593	17,975	418,001	98,273	1747,694
12,500	111899	12,492	3,000	261,621	41,968	14306,668	9607,973	0,796	129,977	128,233	6,541	11,376	406,547	17,917	413,060	98,482	1757,295
12,700	113870	12,695	3,000	261,226	41,969	14423,873	9628,972	0,798	129,944	127,938	6,646	11,220	401,737	17,865	408,356	98,697	1767,256
12,900	115846	12,899	3,000	260,664	41,970	14540,758	9650,010	0,801	129,908	127,642	6,751	11,069	397,069	17,819	403,793	98,913	1777,197
13,100	117827	13,102	3,000	258,815	41,970	14656,224	9673,154	0,808	129,868	127,371	6,856	10,924	392,826	17,780	399,655	99,150	1788,461
13,300	119812	13,305	3,000	258,843	41,971	14770,289	9698,000	0,809	129,824	127,121	6,961	10,786	388,931	17,746	395,866	99,405	1800,793
13,500	121802	13,508	3,000	258,871	41,972	14884,422	9723,051	0,810	129,778	126,873	7,067	10,652	385,161	17,718	392,201	99,661	1813,206
13,700	123798	13,711	3,000	258,898	41,972	14998,603	9748,247	0,811	129,730	126,626	7,172	10,524	381,501	17,695	388,647	99,920	1825,662
13,900	125798	13,914	3,000	258,925	41,973	15112,790	9773,542	0,813	129,678	126,381	7,278	10,400	377,945	17,677	385,196	100,179	1838,146
14,100	127804	14,117	3,000	258,952	41,974	15226,987	9798,878	0,814	129,625	126,140	7,384	10,281	374,482	17,664	381,839	100,439	1850,633



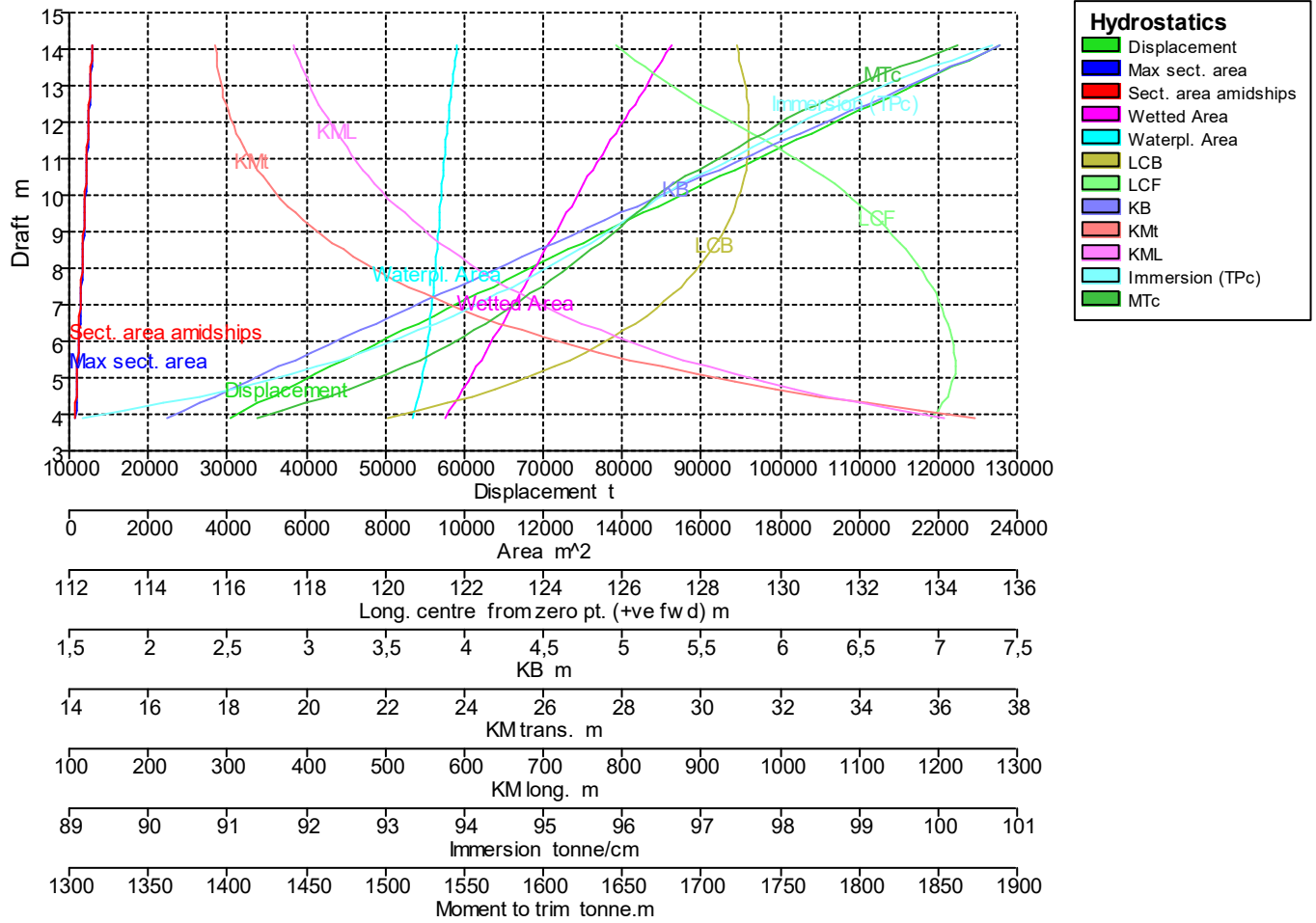
Fixed Trim = 3,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	30302	3,814	3,500	256,388	41,364	9513,354	8699,991	0,718	120,088	133,830	2,124	34,817	1204,867	36,938	1206,878	89,175	1418,773
4,100	32091	4,012	3,500	256,647	41,451	9632,787	8751,563	0,721	120,861	133,991	2,223	33,286	1150,805	35,506	1152,920	89,704	1434,645
4,300	33890	4,210	3,500	256,809	41,527	9750,094	8799,467	0,724	121,564	134,118	2,323	31,872	1101,651	34,192	1103,871	90,195	1449,910
4,500	35698	4,408	3,500	256,982	41,586	9865,980	8844,135	0,727	122,205	134,229	2,424	30,570	1056,540	32,991	1058,865	90,652	1464,299
4,700	37515	4,607	3,500	257,159	41,642	9980,114	8883,711	0,730	122,789	134,301	2,525	29,346	1014,584	31,868	1017,014	91,058	1477,283
4,900	39340	4,807	3,500	257,335	41,683	10094,071	8921,183	0,733	123,324	134,364	2,626	28,217	975,947	30,840	978,481	91,442	1489,736
5,100	41173	5,006	3,500	257,501	41,723	10207,806	8956,958	0,736	123,817	134,423	2,728	27,169	940,423	29,894	943,062	91,809	1501,974
5,300	43012	5,205	3,500	257,661	41,753	10319,124	8987,956	0,738	124,270	134,438	2,829	26,182	906,691	29,009	909,435	92,127	1512,392
5,500	44858	5,406	3,500	257,814	41,781	10428,760	9016,136	0,741	124,689	134,425	2,931	25,260	875,023	28,189	877,872	92,415	1521,793
5,700	46709	5,606	3,500	257,960	41,805	10538,624	9043,060	0,744	125,074	134,411	3,033	24,397	845,703	27,428	848,657	92,691	1531,104
5,900	48566	5,806	3,500	258,094	41,823	10647,982	9068,425	0,746	125,429	134,385	3,135	23,590	818,242	26,723	821,300	92,951	1539,882
6,100	50427	6,007	3,500	258,216	41,842	10757,054	9092,493	0,748	125,759	134,351	3,238	22,832	792,587	26,068	795,750	93,198	1548,405
6,300	52294	6,207	3,500	258,330	41,855	10865,812	9114,955	0,751	126,064	134,302	3,340	22,119	768,421	25,457	771,689	93,428	1556,395
6,500	54165	6,408	3,500	258,434	41,867	10974,399	9136,621	0,753	126,347	134,248	3,443	21,450	745,743	24,890	749,116	93,650	1564,155
6,700	56040	6,609	3,500	258,526	41,879	11082,325	9156,084	0,755	126,610	134,177	3,545	20,816	724,123	24,359	727,601	93,850	1571,044
6,900	57919	6,810	3,500	258,616	41,887	11190,469	9175,138	0,758	126,854	134,102	3,648	20,220	703,838	23,866	707,419	94,045	1577,905
7,100	59802	7,011	3,500	258,690	41,895	11298,378	9194,193	0,760	127,080	134,024	3,751	19,657	684,853	23,406	688,539	94,240	1584,947
7,300	61689	7,212	3,500	258,754	41,902	11406,204	9212,489	0,762	127,291	133,938	3,853	19,125	666,905	22,977	670,696	94,428	1591,809
7,500	63579	7,414	3,500	258,803	41,908	11514,058	9230,422	0,764	127,486	133,840	3,956	18,621	649,975	22,575	653,870	94,612	1598,659
7,700	65474	7,615	3,500	258,837	41,913	11621,995	9247,853	0,766	127,668	133,732	4,059	18,143	633,917	22,201	637,917	94,790	1605,346
7,900	67371	7,817	3,500	258,858	41,918	11729,675	9264,688	0,768	127,836	133,615	4,162	17,689	618,667	21,850	622,771	94,963	1611,878
8,100	69272	8,019	3,500	258,880	41,922	11837,790	9281,210	0,770	127,993	133,486	4,265	17,257	604,214	21,521	608,423	95,132	1618,402
8,300	71177	8,220	3,500	258,913	41,926	11946,063	9297,133	0,772	128,137	133,347	4,369	16,847	590,403	21,214	594,716	95,296	1624,655
8,500	73085	8,423	3,500	258,945	41,929	12054,630	9312,864	0,773	128,270	133,197	4,472	16,456	577,281	20,926	581,698	95,457	1630,906
8,700	74996	8,625	3,500	258,981	41,933	12163,655	9327,973	0,775	128,393	133,036	4,575	16,083	564,727	20,657	569,248	95,612	1636,949
8,900	76910	8,827	3,500	259,020	41,936	12272,965	9342,728	0,777	128,506	132,866	4,678	15,728	552,723	20,404	557,349	95,763	1642,854
9,100	78827	9,030	3,500	259,063	41,939	12383,113	9357,039	0,779	128,609	132,680	4,782	15,388	541,217	20,168	545,948	95,910	1648,573
9,300	80746	9,232	3,500	259,118	41,942	12493,670	9370,781	0,780	128,703	132,485	4,885	15,063	530,152	19,947	534,987	96,051	1654,032
9,500	82669	9,435	3,500	259,192	41,944	12605,324	9383,808	0,782	128,787	132,273	4,989	14,753	519,481	19,740	524,421	96,184	1659,175

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
9,700	84594	9,638	3,500	259,297	41,947	12717,862	9395,972	0,783	128,863	132,047	5,092	14,455	509,134	19,546	514,179	96,309	1663,852
9,900	86522	9,841	3,500	259,464	41,949	12830,926	9408,483	0,784	128,931	131,816	5,196	14,171	499,290	19,366	504,439	96,437	1668,734
10,100	88452	10,044	3,500	259,779	41,951	12911,296	9424,189	0,784	128,992	131,608	5,300	13,901	490,404	19,200	495,658	96,598	1675,513
10,300	90386	10,247	3,500	263,679	41,953	13022,625	9439,836	0,774	129,045	131,378	5,404	13,643	481,892	19,045	487,251	96,758	1682,348
10,500	92323	10,451	3,500	263,568	41,955	13136,714	9457,225	0,776	129,091	131,113	5,507	13,394	474,061	18,901	479,524	96,937	1690,433
10,700	94263	10,655	3,500	263,468	41,956	13252,173	9474,872	0,778	129,130	130,834	5,611	13,157	466,576	18,767	472,143	97,117	1698,690
10,900	96207	10,859	3,500	263,363	41,958	13368,199	9492,660	0,780	129,162	130,541	5,715	12,929	459,393	18,643	465,065	97,300	1707,027
11,100	98155	11,063	3,500	263,249	41,959	13485,038	9510,317	0,781	129,186	130,238	5,820	12,710	452,457	18,528	458,234	97,481	1715,300
11,300	100106	11,267	3,500	263,125	41,961	13602,705	9527,766	0,783	129,204	129,925	5,924	12,500	445,729	18,422	451,611	97,660	1723,407
11,500	102061	11,472	3,500	262,989	41,962	13721,159	9544,920	0,785	129,215	129,602	6,028	12,298	439,179	18,325	445,166	97,835	1731,273
11,700	104019	11,676	3,500	262,837	41,963	13840,096	9562,142	0,787	129,219	129,274	6,133	12,105	432,854	18,237	438,945	98,012	1739,123
11,900	105980	11,881	3,500	262,667	41,964	13959,318	9578,628	0,788	129,217	128,932	6,237	11,920	426,616	18,156	432,813	98,181	1746,442
12,100	107946	12,086	3,500	262,477	41,965	14078,747	9595,767	0,790	129,209	128,594	6,341	11,743	420,669	18,083	426,971	98,357	1754,101
12,300	109915	12,290	3,500	262,260	41,967	14196,507	9616,031	0,792	129,196	128,292	6,446	11,573	415,350	18,018	421,757	98,564	1763,629
12,500	111888	12,494	3,500	262,008	41,968	14314,620	9636,520	0,794	129,177	127,990	6,551	11,410	410,216	17,960	416,728	98,774	1773,229
12,700	113865	12,698	3,500	261,712	41,968	14433,062	9657,235	0,797	129,154	127,688	6,656	11,253	405,258	17,908	411,876	98,987	1782,905
12,900	115847	12,902	3,500	261,345	41,969	14550,936	9678,437	0,799	129,127	127,391	6,761	11,103	400,515	17,863	407,238	99,204	1792,869
13,100	117833	13,106	3,500	260,842	41,970	14668,092	9699,653	0,802	129,095	127,093	6,866	10,959	395,907	17,824	402,736	99,421	1802,802
13,300	119823	13,310	3,500	258,811	41,971	14784,463	9722,205	0,809	129,060	126,812	6,972	10,820	391,605	17,791	398,540	99,653	1813,541
13,500	121818	13,514	3,500	258,839	41,972	14898,616	9747,194	0,810	129,021	126,562	7,077	10,687	387,752	17,763	394,793	99,909	1825,843
13,700	123819	13,717	3,500	258,867	41,972	15012,793	9772,297	0,812	128,980	126,315	7,183	10,559	384,011	17,741	391,158	100,166	1838,177
13,900	125824	13,920	3,500	258,894	41,973	15126,939	9797,427	0,813	128,935	126,071	7,289	10,436	380,369	17,724	387,622	100,424	1850,506
14,100	127835	14,124	3,500	258,921	41,973	15241,022	9822,606	0,814	128,889	125,831	7,395	10,318	376,821	17,711	384,181	100,682	1862,828



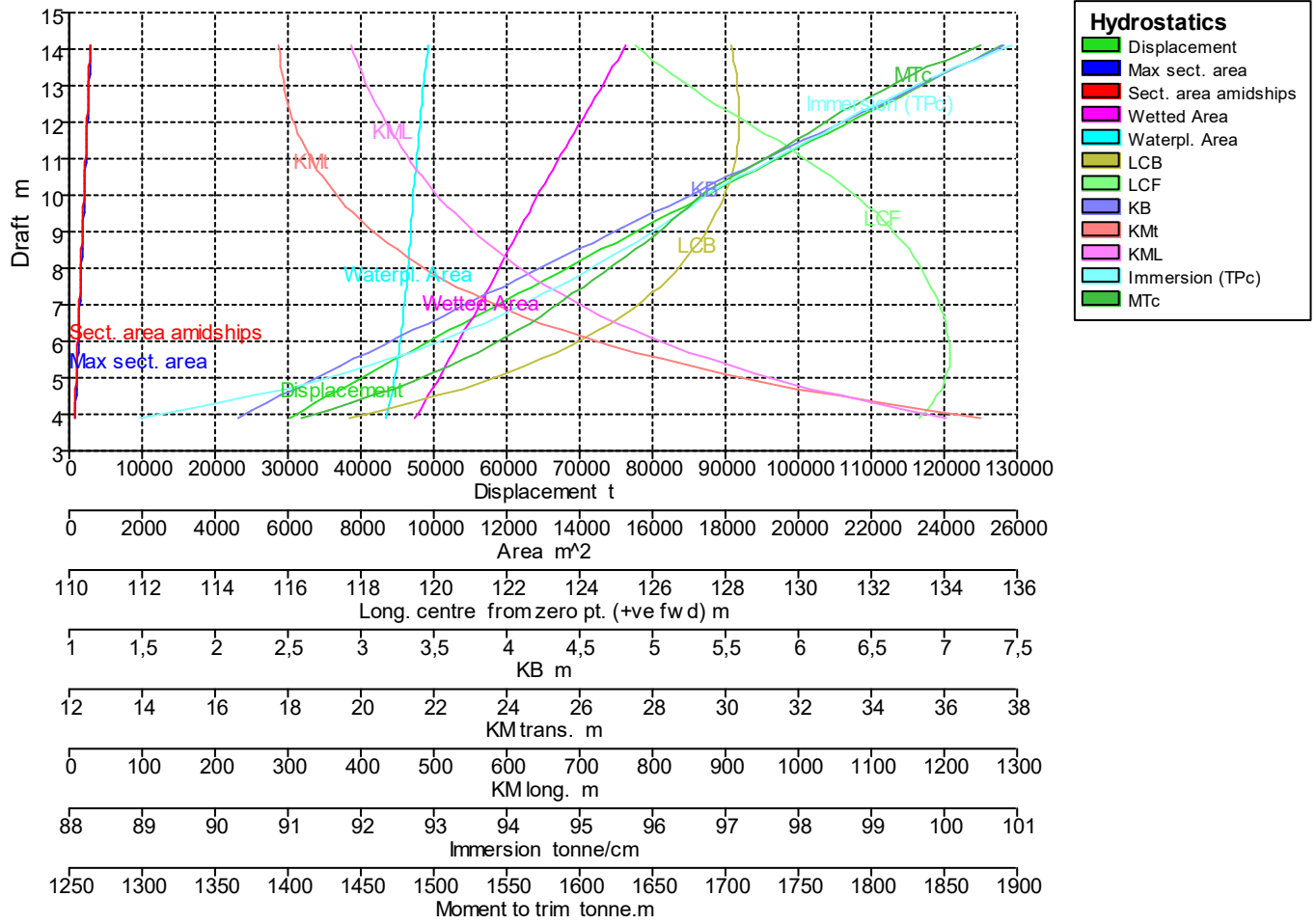
Fixed Trim = 4 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	30197	3,810	4,000	255,677	41,339	9497,332	8679,640	0,717	117,683	133,313	2,152	34,833	1201,151	36,981	1203,156	88,966	1409,398
4,100	31981	4,007	4,000	255,930	41,429	9618,878	8735,193	0,720	118,562	133,510	2,250	33,320	1148,687	35,566	1150,796	89,536	1427,058
4,300	33777	4,204	4,000	256,182	41,505	9737,913	8785,524	0,723	119,363	133,675	2,349	31,916	1100,338	34,261	1102,552	90,052	1443,307
4,500	35583	4,402	4,000	256,430	41,570	9855,504	8831,822	0,726	120,094	133,811	2,448	30,615	1055,759	33,059	1058,077	90,526	1458,444
4,700	37398	4,600	4,000	256,669	41,626	9971,922	8874,828	0,729	120,763	133,926	2,548	29,411	1014,628	31,956	1017,051	90,967	1472,713
4,900	39221	4,799	4,000	256,900	41,672	10086,486	8913,364	0,732	121,376	134,005	2,648	28,280	976,219	30,924	978,747	91,362	1485,629
5,100	41052	4,998	4,000	257,113	41,712	10200,250	8949,453	0,735	121,941	134,072	2,748	27,228	940,698	29,973	943,330	91,732	1497,997
5,300	42891	5,197	4,000	257,317	41,745	10313,962	8984,541	0,737	122,461	134,133	2,849	26,253	908,014	29,099	910,751	92,092	1510,308
5,500	44736	5,396	4,000	257,510	41,773	10425,634	9015,283	0,740	122,943	134,155	2,950	25,333	876,968	28,279	879,810	92,407	1521,031
5,700	46587	5,596	4,000	257,693	41,799	10536,033	9043,266	0,742	123,389	134,155	3,051	24,469	847,735	27,517	850,681	92,693	1530,784
5,900	48444	5,797	4,000	257,862	41,818	10645,231	9069,274	0,745	123,800	134,135	3,152	23,660	820,276	26,809	823,327	92,960	1539,847
6,100	50305	5,997	4,000	258,017	41,836	10754,736	9094,232	0,747	124,182	134,110	3,254	22,900	794,697	26,151	797,853	93,216	1548,799
6,300	52172	6,198	4,000	258,161	41,851	10863,936	9118,031	0,750	124,536	134,078	3,356	22,187	770,711	25,540	773,972	93,460	1557,440
6,500	54044	6,398	4,000	258,298	41,863	10972,720	9140,156	0,752	124,865	134,033	3,458	21,515	747,997	24,970	751,362	93,687	1565,414
6,700	55920	6,599	4,000	258,429	41,876	11081,336	9161,337	0,754	125,171	133,981	3,560	20,881	726,660	24,438	730,130	93,904	1573,217
6,900	57800	6,800	4,000	258,540	41,885	11189,509	9181,174	0,756	125,456	133,909	3,662	20,282	706,418	23,941	709,993	94,107	1580,495
7,100	59684	7,002	4,000	258,640	41,892	11298,036	9200,466	0,758	125,721	133,827	3,764	19,717	687,370	23,478	691,050	94,305	1587,700
7,300	61573	7,203	4,000	258,726	41,900	11406,302	9219,868	0,760	125,968	133,744	3,866	19,182	669,565	23,046	673,349	94,504	1595,208
7,500	63465	7,404	4,000	258,801	41,906	11514,539	9238,694	0,762	126,197	133,650	3,969	18,677	652,705	22,643	656,594	94,697	1602,549
7,700	65361	7,606	4,000	258,858	41,911	11622,742	9257,015	0,764	126,411	133,547	4,071	18,197	636,723	22,267	640,716	94,884	1609,746
7,900	67260	7,808	4,000	258,906	41,916	11731,169	9275,021	0,766	126,611	133,432	4,174	17,742	621,617	21,914	625,715	95,069	1616,985
8,100	69164	8,010	4,000	258,945	41,921	11839,352	9292,429	0,768	126,796	133,309	4,277	17,309	607,220	21,584	611,422	95,247	1623,993
8,300	71071	8,212	4,000	258,976	41,925	11947,923	9309,610	0,770	126,968	133,175	4,380	16,898	593,555	21,275	597,862	95,424	1630,990
8,500	72981	8,414	4,000	259,022	41,928	12056,766	9326,228	0,772	127,128	133,028	4,483	16,506	580,494	20,986	584,905	95,594	1637,766
8,700	74895	8,617	4,000	259,078	41,932	12165,806	9342,437	0,774	127,276	132,873	4,586	16,132	568,034	20,716	572,550	95,760	1644,441
8,900	76812	8,819	4,000	259,140	41,935	12275,429	9358,310	0,776	127,413	132,705	4,689	15,775	556,130	20,462	560,750	95,923	1651,006
9,100	78732	9,022	4,000	259,214	41,938	12385,316	9373,732	0,777	127,539	132,528	4,792	15,435	544,708	20,225	549,433	96,081	1657,354
9,300	80655	9,225	4,000	259,308	41,941	12495,992	9388,680	0,779	127,655	132,338	4,896	15,109	533,753	20,003	538,583	96,234	1663,540
9,500	82582	9,428	4,000	259,446	41,943	12607,157	9403,130	0,780	127,761	132,138	4,999	14,798	523,216	19,795	528,151	96,382	1669,503

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
9,700	84511	9,631	4,000	259,660	41,946	12689,229	9416,883	0,781	127,858	131,921	5,103	14,500	513,027	19,601	518,067	96,523	1675,102
9,900	86443	9,835	4,000	260,054	41,948	12801,332	9430,622	0,781	127,946	131,682	5,207	14,214	503,297	19,419	508,442	96,664	1680,774
10,100	88377	10,039	4,000	263,812	41,950	12915,317	9444,491	0,772	128,025	131,416	5,310	13,941	494,035	19,250	499,285	96,806	1686,663
10,300	90315	10,243	4,000	263,735	41,952	13029,307	9463,574	0,774	128,095	131,166	5,414	13,682	486,064	19,094	491,419	97,002	1695,796
10,500	92257	10,448	4,000	263,659	41,954	13144,088	9482,315	0,775	128,157	130,897	5,518	13,433	478,345	18,949	483,804	97,194	1704,717
10,700	94202	10,652	4,000	263,575	41,956	13259,314	9501,243	0,777	128,211	130,616	5,622	13,195	470,949	18,815	476,513	97,388	1713,740
10,900	96152	10,856	4,000	263,485	41,957	13375,264	9520,067	0,779	128,257	130,325	5,726	12,966	463,810	18,690	469,479	97,581	1722,693
11,100	98105	11,061	4,000	263,387	41,959	13491,856	9538,743	0,781	128,295	130,026	5,830	12,747	456,908	18,575	462,682	97,772	1731,549
11,300	100062	11,266	4,000	263,279	41,960	13609,117	9557,165	0,782	128,326	129,718	5,934	12,536	450,203	18,469	456,082	97,961	1740,203
11,500	102023	11,471	4,000	263,160	41,962	13727,153	9575,333	0,784	128,350	129,401	6,039	12,335	443,679	18,372	449,664	98,147	1748,632
11,700	103987	11,676	4,000	263,027	41,963	13845,908	9593,190	0,786	128,367	129,076	6,143	12,141	437,319	18,283	443,408	98,330	1756,801
11,900	105955	11,881	4,000	262,880	41,964	13965,314	9611,029	0,788	128,377	128,746	6,248	11,956	431,166	18,202	437,361	98,513	1764,931
12,100	107927	12,087	4,000	262,717	41,965	14084,801	9628,031	0,789	128,381	128,402	6,353	11,778	425,074	18,129	431,374	98,687	1772,441
12,300	109902	12,292	4,000	262,533	41,966	14205,062	9644,751	0,791	128,379	128,051	6,458	11,608	419,122	18,064	425,528	98,859	1779,689
12,500	111881	12,497	4,000	262,325	41,967	14323,040	9665,441	0,793	128,370	127,747	6,563	11,445	413,909	18,006	420,421	99,071	1789,335
12,700	113865	12,702	4,000	262,087	41,968	14441,334	9686,218	0,795	128,357	127,444	6,668	11,289	408,859	17,955	415,476	99,284	1798,981
12,900	115852	12,906	4,000	261,803	41,969	14559,959	9707,118	0,798	128,339	127,141	6,773	11,139	403,970	17,910	410,693	99,498	1808,657
13,100	117844	13,111	4,000	261,459	41,970	14678,400	9728,420	0,800	128,317	126,843	6,878	10,995	399,274	17,872	406,103	99,716	1818,542
13,300	119840	13,316	4,000	261,004	41,971	14795,647	9749,776	0,803	128,290	126,546	6,984	10,856	394,716	17,839	401,652	99,935	1828,429
13,500	121841	13,520	4,000	260,230	41,972	14912,420	9771,919	0,806	128,259	126,260	7,090	10,724	390,386	17,812	397,427	100,162	1838,771
13,700	123846	13,724	4,000	258,836	41,972	15026,938	9796,470	0,812	128,225	126,008	7,195	10,596	386,500	17,790	393,648	100,414	1850,683
13,900	125856	13,928	4,000	258,864	41,973	15140,985	9821,397	0,813	128,188	125,766	7,301	10,473	382,766	17,773	390,020	100,669	1862,820
14,100	127872	14,132	4,000	258,892	41,973	15254,951	9846,335	0,814	128,148	125,526	7,408	10,355	379,125	17,761	386,486	100,925	1874,931



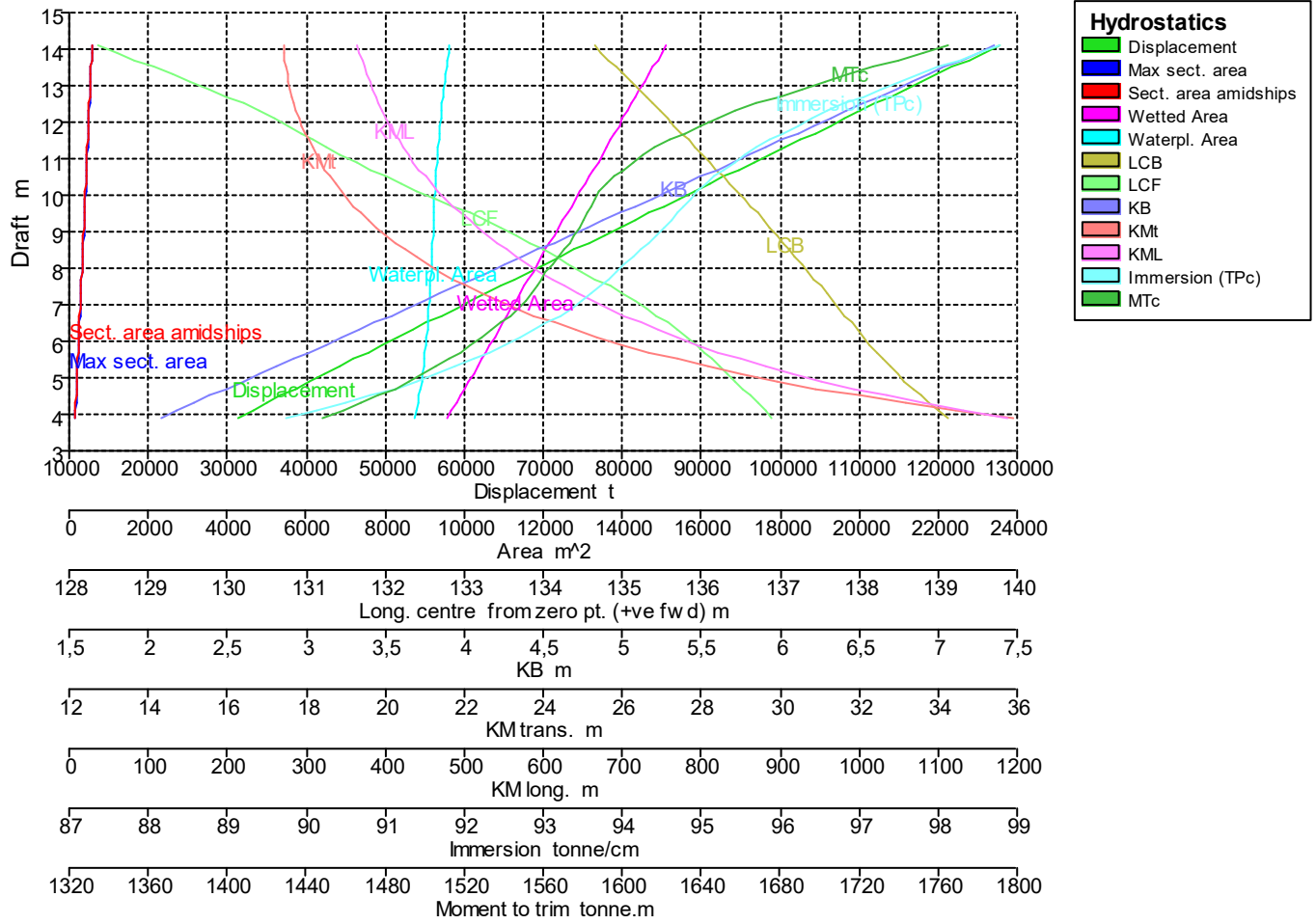
Fixed Trim = -0,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	31419	3,918	-0,500	258,804	41,572	9571,663	8756,260	0,737	139,132	136,898	2,077	33,806	1186,155	35,884	1188,230	89,752	1448,043
4,100	33218	4,118	-0,500	259,027	41,626	9684,201	8794,274	0,739	139,008	136,810	2,183	32,285	1130,408	34,468	1132,588	90,141	1458,512
4,300	35025	4,318	-0,500	259,227	41,675	9795,511	8828,859	0,741	138,891	136,725	2,288	30,890	1079,427	33,178	1081,712	90,496	1467,987
4,500	36838	4,518	-0,500	259,409	41,713	9906,050	8860,672	0,743	138,782	136,634	2,392	29,606	1032,797	31,998	1035,187	90,822	1476,810
4,700	38658	4,718	-0,500	259,516	41,750	10015,471	8889,948	0,745	138,677	136,533	2,497	28,422	989,870	30,919	992,365	91,122	1484,868
4,900	40484	4,917	-0,500	259,588	41,776	10124,541	8916,211	0,748	138,578	136,434	2,602	27,322	950,093	29,924	952,693	91,391	1492,024
5,100	42314	5,117	-0,500	259,640	41,802	10233,005	8941,374	0,750	138,482	136,338	2,706	26,304	913,593	29,010	916,297	91,649	1499,120
5,300	44150	5,317	-0,500	259,677	41,821	10341,002	8965,259	0,752	138,390	136,241	2,811	25,359	879,851	28,170	882,660	91,894	1505,939
5,500	45990	5,517	-0,500	259,699	41,838	10448,431	8987,088	0,754	138,302	136,145	2,915	24,476	848,369	27,391	851,282	92,118	1512,141
5,700	47835	5,717	-0,500	259,708	41,855	10555,333	9007,578	0,756	138,217	136,049	3,019	23,652	818,998	26,672	822,016	92,328	1517,909
5,900	49683	5,916	-0,500	259,698	41,865	10662,006	9026,344	0,758	138,135	135,946	3,123	22,880	791,463	26,003	794,585	92,520	1523,137
6,100	51535	6,116	-0,500	259,559	41,876	10768,189	9044,945	0,761	138,055	135,831	3,227	22,156	766,001	25,383	769,227	92,711	1528,689
6,300	53391	6,316	-0,500	259,364	41,886	10874,147	9062,169	0,764	137,976	135,707	3,331	21,475	742,032	24,806	745,362	92,887	1533,785
6,500	55250	6,516	-0,500	259,204	41,893	10980,058	9078,376	0,766	137,899	135,579	3,435	20,834	719,508	24,269	722,941	93,053	1538,633
6,700	57112	6,715	-0,500	259,069	41,900	11086,747	9093,650	0,768	137,821	135,444	3,539	20,229	698,261	23,768	701,798	93,210	1543,170
6,900	58978	6,915	-0,500	258,952	41,906	11193,848	9107,748	0,770	137,743	135,306	3,642	19,658	678,112	23,301	681,753	93,354	1547,244
7,100	60847	7,115	-0,500	258,848	41,911	11301,241	9120,749	0,772	137,666	135,160	3,746	19,118	658,997	22,864	662,741	93,488	1550,919
7,300	62718	7,315	-0,500	258,751	41,915	11408,994	9132,812	0,774	137,588	135,005	3,849	18,606	640,849	22,456	644,697	93,611	1554,253
7,500	64592	7,514	-0,500	258,660	41,920	11517,397	9143,811	0,776	137,510	134,838	3,953	18,121	623,546	22,074	627,498	93,724	1557,136
7,700	66467	7,714	-0,500	258,575	41,923	11626,320	9153,624	0,778	137,432	134,665	4,056	17,661	606,982	21,717	611,037	93,825	1559,465
7,900	68345	7,914	-0,500	258,492	41,927	11736,337	9162,244	0,780	137,353	134,478	4,159	17,223	591,128	21,382	595,286	93,913	1561,321
8,100	70225	8,113	-0,500	258,408	41,931	11843,939	9173,431	0,782	137,273	134,321	4,262	16,810	576,613	21,073	580,874	94,028	1564,586
8,300	72106	8,313	-0,500	258,323	41,934	11951,659	9184,133	0,784	137,194	134,163	4,366	16,417	562,766	20,783	567,130	94,137	1567,665
8,500	73991	8,513	-0,500	258,238	41,937	12059,743	9194,538	0,785	137,114	133,998	4,469	16,043	549,569	20,511	554,036	94,244	1570,651
8,700	75877	8,712	-0,500	258,150	41,940	12168,156	9204,103	0,787	137,034	133,831	4,572	15,686	536,869	20,257	541,440	94,342	1573,225
8,900	77765	8,912	-0,500	258,065	41,942	12277,114	9213,433	0,788	136,954	133,655	4,675	15,345	524,745	20,020	529,419	94,438	1575,729
9,100	79655	9,112	-0,500	257,969	41,945	12386,596	9222,273	0,790	136,873	133,472	4,777	15,020	513,109	19,797	517,886	94,528	1578,015
9,300	81547	9,311	-0,500	257,866	41,947	12496,850	9230,857	0,792	136,792	133,277	4,880	14,709	501,976	19,590	506,855	94,616	1580,233
9,500	83440	9,511	-0,500	257,750	41,949	12607,772	9239,048	0,793	136,709	133,072	4,983	14,412	491,280	19,395	496,262	94,700	1582,276

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPC) tonne/cm	MTc tonne.m
9,700	85336	9,710	-0,500	257,623	41,951	12718,883	9247,224	0,795	136,625	132,861	5,086	14,128	481,066	19,214	486,151	94,784	1584,394
9,900	87232	9,910	-0,500	257,479	41,953	12830,524	9254,647	0,796	136,541	132,635	5,189	13,856	471,156	19,045	476,343	94,860	1586,073
10,100	89131	10,110	-0,500	257,319	41,955	12942,822	9262,257	0,798	136,455	132,402	5,291	13,596	461,700	18,887	466,990	94,938	1587,912
10,300	91031	10,309	-0,500	257,136	41,957	13053,104	9273,463	0,800	136,368	132,212	5,394	13,347	453,222	18,741	458,615	95,053	1591,882
10,500	92934	10,509	-0,500	256,924	41,958	13163,859	9284,990	0,801	136,280	132,018	5,497	13,108	445,142	18,604	450,637	95,171	1596,095
10,700	94839	10,708	-0,500	256,677	41,960	13275,046	9296,823	0,803	136,192	131,822	5,599	12,878	437,431	18,477	443,029	95,292	1600,530
10,900	96747	10,908	-0,500	256,360	41,961	13385,471	9309,520	0,805	136,103	131,632	5,702	12,658	430,154	18,360	435,855	95,423	1605,516
11,100	98657	11,108	-0,500	255,921	41,962	13495,750	9322,146	0,808	136,014	131,432	5,805	12,446	423,146	18,251	428,950	95,552	1610,511
11,300	100570	11,307	-0,500	254,060	41,963	13605,320	9336,205	0,815	135,925	131,247	5,907	12,242	416,613	18,149	422,520	95,696	1616,390
11,500	102486	11,507	-0,500	254,202	41,964	13713,119	9352,972	0,815	135,835	131,087	6,010	12,046	410,731	18,056	416,740	95,868	1623,966
11,700	104406	11,707	-0,500	254,383	41,965	13821,142	9370,012	0,816	135,746	130,928	6,113	11,857	405,090	17,970	411,203	96,043	1631,721
11,900	106329	11,906	-0,500	254,632	41,966	13929,602	9387,487	0,816	135,657	130,765	6,216	11,675	399,702	17,891	405,917	96,222	1639,747
12,100	108255	12,106	-0,500	255,026	41,967	14007,307	9405,843	0,816	135,568	130,593	6,320	11,500	394,626	17,820	400,945	96,410	1648,354
12,300	110185	12,306	-0,500	255,791	41,968	14115,755	9425,030	0,814	135,479	130,412	6,423	11,331	389,839	17,754	396,261	96,607	1657,512
12,500	112120	12,505	-0,500	259,024	41,969	14226,390	9446,196	0,805	135,390	130,207	6,526	11,168	385,505	17,694	392,030	96,824	1668,017
12,700	114058	12,705	-0,500	259,036	41,970	14338,174	9468,475	0,806	135,300	129,989	6,629	11,012	381,465	17,641	388,093	97,052	1679,258
12,900	116002	12,904	-0,500	259,053	41,971	14450,592	9491,380	0,807	135,209	129,765	6,733	10,860	377,622	17,593	384,354	97,287	1690,868
13,100	117950	13,104	-0,500	259,072	41,972	14563,707	9514,631	0,808	135,118	129,535	6,837	10,715	373,931	17,551	380,766	97,525	1702,675
13,300	119903	13,303	-0,500	259,093	41,972	14677,182	9538,344	0,809	135,025	129,303	6,940	10,574	370,397	17,514	377,336	97,768	1714,745
13,500	121860	13,503	-0,500	259,114	41,973	14790,543	9562,459	0,810	134,931	129,070	7,044	10,439	367,006	17,483	374,049	98,015	1727,042
13,700	123823	13,703	-0,500	259,136	41,973	14904,115	9586,967	0,811	134,836	128,837	7,148	10,308	363,747	17,456	370,894	98,266	1739,544
13,900	125791	13,902	-0,500	259,158	41,974	15017,800	9611,794	0,812	134,741	128,602	7,252	10,182	360,603	17,434	367,854	98,521	1752,198
14,100	127764	14,102	-0,500	259,177	41,974	15131,572	9636,930	0,813	134,644	128,366	7,356	10,061	357,568	17,417	364,923	98,779	1765,002



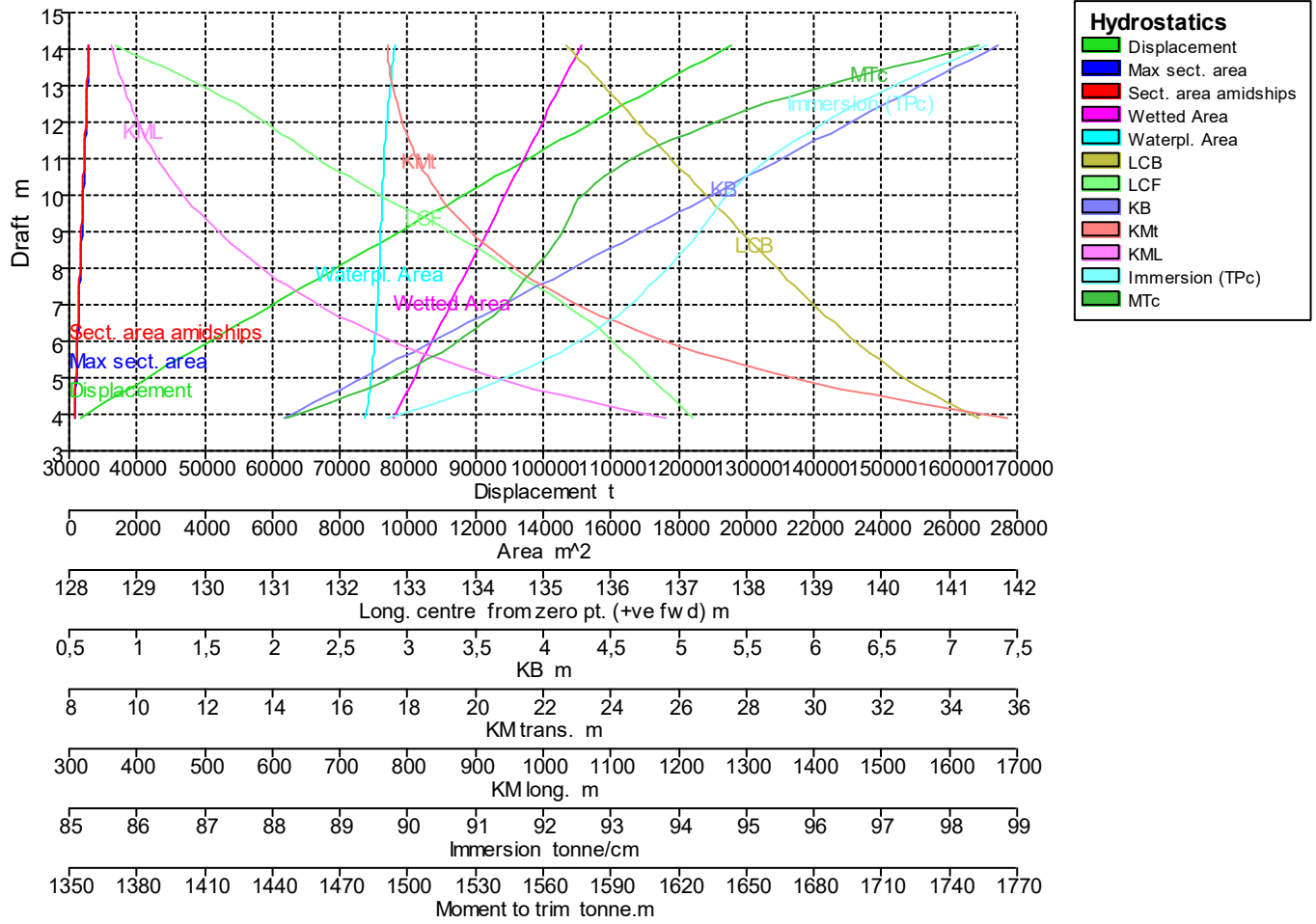
Fixed Trim = -1 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	31586	3,938	-1,000	258,878	41,592	9572,738	8751,484	0,741	141,432	137,206	2,094	33,595	1178,661	35,689	1180,746	89,703	1446,446
4,100	33384	4,137	-1,000	259,080	41,645	9685,211	8788,903	0,742	141,200	137,093	2,199	32,090	1123,430	34,289	1125,620	90,086	1456,652
4,300	35190	4,337	-1,000	259,261	41,689	9796,246	8823,053	0,744	140,986	136,974	2,303	30,712	1072,902	33,015	1075,197	90,436	1465,879
4,500	37002	4,537	-1,000	259,424	41,727	9906,646	8854,129	0,746	140,786	136,866	2,408	29,439	1026,624	31,846	1029,024	90,755	1474,395
4,700	38820	4,736	-1,000	259,569	41,760	10016,488	8882,677	0,748	140,599	136,747	2,512	28,265	983,998	30,777	986,503	91,047	1482,140
4,900	40644	4,936	-1,000	259,656	41,785	10125,677	8909,906	0,750	140,423	136,636	2,616	27,180	944,986	29,796	947,595	91,327	1489,789
5,100	42474	5,135	-1,000	259,687	41,810	10233,944	8934,705	0,752	140,257	136,532	2,721	26,172	908,710	28,893	911,423	91,581	1496,618
5,300	44308	5,335	-1,000	259,704	41,827	10341,825	8958,065	0,755	140,099	136,423	2,825	25,234	875,188	28,059	878,006	91,820	1503,208
5,500	46147	5,534	-1,000	259,706	41,845	10449,173	8979,833	0,757	139,950	136,311	2,929	24,360	843,991	27,289	846,913	92,043	1509,349
5,700	47990	5,734	-1,000	259,696	41,859	10556,228	8999,846	0,759	139,808	136,198	3,033	23,543	814,782	26,575	817,808	92,248	1514,878
5,900	49837	5,933	-1,000	259,692	41,870	10663,001	9018,338	0,761	139,672	136,086	3,136	22,777	787,435	25,913	790,565	92,438	1519,958
6,100	51687	6,133	-1,000	259,686	41,881	10769,614	9035,450	0,763	139,542	135,967	3,240	22,058	761,739	25,298	764,973	92,613	1524,540
6,300	53541	6,332	-1,000	259,599	41,889	10875,909	9052,025	0,765	139,416	135,839	3,344	21,383	737,810	24,727	741,148	92,783	1529,212
6,500	55398	6,532	-1,000	259,377	41,896	10982,034	9067,530	0,767	139,295	135,700	3,447	20,747	715,309	24,194	718,751	92,942	1533,612
6,700	57258	6,731	-1,000	259,194	41,902	11088,244	9082,066	0,770	139,177	135,557	3,551	20,147	694,105	23,697	697,650	93,091	1537,743
6,900	59121	6,931	-1,000	259,039	41,908	11195,222	9095,592	0,772	139,061	135,403	3,654	19,580	674,026	23,234	677,675	93,230	1541,485
7,100	60987	7,130	-1,000	258,902	41,912	11302,978	9107,859	0,774	138,946	135,246	3,757	19,043	654,933	22,801	658,685	93,356	1544,742
7,300	62855	7,330	-1,000	258,777	41,917	11411,436	9118,760	0,776	138,833	135,077	3,861	18,535	636,696	22,396	640,551	93,467	1547,389
7,500	64726	7,529	-1,000	258,661	41,921	11520,502	9128,557	0,778	138,721	134,898	3,964	18,053	619,306	22,017	623,265	93,568	1549,581
7,700	66598	7,728	-1,000	258,553	41,925	11630,188	9137,829	0,780	138,611	134,712	4,067	17,596	602,819	21,663	606,881	93,663	1551,636
7,900	68473	7,927	-1,000	258,447	41,928	11737,438	9149,100	0,782	138,501	134,561	4,170	17,165	587,628	21,334	591,794	93,778	1554,815
8,100	70350	8,127	-1,000	258,342	41,932	11845,113	9159,797	0,783	138,394	134,401	4,273	16,755	573,140	21,027	577,408	93,888	1557,764
8,300	72229	8,326	-1,000	258,237	41,935	11953,134	9170,113	0,785	138,287	134,236	4,375	16,364	559,343	20,739	563,714	93,994	1560,601
8,500	74110	8,526	-1,000	258,131	41,938	12061,600	9179,813	0,787	138,182	134,066	4,478	15,992	546,135	20,470	550,609	94,093	1563,174
8,700	75993	8,725	-1,000	258,022	41,941	12170,602	9189,010	0,788	138,078	133,889	4,581	15,637	533,487	20,218	538,064	94,187	1565,524
8,900	77878	8,924	-1,000	257,906	41,943	12279,976	9197,464	0,790	137,974	133,708	4,684	15,299	521,315	19,982	525,995	94,274	1567,512
9,100	79765	9,123	-1,000	257,793	41,946	12390,031	9205,550	0,792	137,870	133,518	4,786	14,976	509,648	19,762	514,431	94,357	1569,328
9,300	81653	9,323	-1,000	257,667	41,948	12500,708	9213,428	0,793	137,767	133,326	4,889	14,667	498,499	19,556	503,384	94,438	1571,120
9,500	83543	9,522	-1,000	257,529	41,950	12611,387	9220,514	0,795	137,663	133,114	4,992	14,372	487,712	19,363	492,700	94,510	1572,495

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPC) tonne/cm	MTc tonne.m
9,700	85434	9,721	-1,000	257,373	41,952	12722,786	9227,325	0,796	137,560	132,894	5,094	14,089	477,357	19,183	482,448	94,580	1573,759
9,900	87327	9,920	-1,000	257,198	41,954	12834,058	9235,252	0,798	137,456	132,681	5,196	13,819	467,641	19,016	472,834	94,661	1575,715
10,100	89222	10,119	-1,000	256,998	41,956	12943,928	9245,812	0,800	137,352	132,499	5,299	13,561	458,768	18,860	464,064	94,770	1579,233
10,300	91119	10,319	-1,000	256,767	41,957	13054,286	9256,850	0,802	137,249	132,312	5,401	13,313	450,349	18,714	455,747	94,883	1583,105
10,500	93018	10,518	-1,000	256,483	41,959	13164,947	9268,098	0,804	137,146	132,126	5,504	13,075	442,302	18,579	447,802	94,998	1587,134
10,700	94920	10,717	-1,000	256,127	41,960	13274,416	9280,260	0,806	137,043	131,944	5,606	12,847	434,729	18,453	440,332	95,123	1591,786
10,900	96824	10,916	-1,000	255,596	41,961	13384,066	9292,297	0,808	136,940	131,752	5,709	12,627	427,428	18,336	433,134	95,246	1596,397
11,100	98730	11,116	-1,000	253,896	41,962	13492,248	9306,576	0,815	136,838	131,586	5,811	12,416	420,751	18,227	426,558	95,392	1602,388
11,300	100640	11,315	-1,000	253,992	41,964	13599,404	9322,773	0,816	136,736	131,435	5,914	12,213	414,619	18,126	420,529	95,558	1609,601
11,500	102554	11,515	-1,000	254,105	41,965	13706,723	9339,219	0,816	136,635	131,283	6,016	12,017	408,739	18,033	414,753	95,727	1616,980
11,700	104470	11,714	-1,000	254,239	41,966	13814,464	9356,113	0,817	136,535	131,128	6,119	11,829	403,130	17,948	409,246	95,900	1624,653
11,900	106391	11,913	-1,000	254,406	41,967	13922,402	9373,278	0,817	136,435	130,971	6,222	11,647	397,748	17,869	403,967	96,076	1632,499
12,100	108315	12,113	-1,000	254,635	41,967	14030,854	9390,877	0,817	136,336	130,812	6,325	11,472	392,606	17,797	398,928	96,256	1640,627
12,300	110242	12,312	-1,000	254,977	41,968	14108,776	9409,124	0,817	136,238	130,645	6,428	11,304	387,727	17,732	394,152	96,444	1649,177
12,500	112173	12,511	-1,000	255,595	41,969	14217,076	9428,287	0,816	136,140	130,469	6,531	11,142	383,136	17,672	389,664	96,640	1658,331
12,700	114107	12,711	-1,000	259,093	41,970	14327,136	9448,974	0,806	136,042	130,272	6,634	10,985	378,914	17,619	385,546	96,852	1668,515
12,900	116047	12,910	-1,000	259,101	41,971	14439,530	9471,092	0,807	135,944	130,056	6,737	10,834	375,028	17,571	381,762	97,079	1679,663
13,100	117991	13,109	-1,000	259,117	41,972	14552,433	9493,945	0,808	135,845	129,834	6,841	10,688	371,347	17,529	378,185	97,313	1691,253
13,300	119939	13,308	-1,000	259,133	41,972	14665,192	9517,349	0,809	135,746	129,609	6,944	10,548	367,840	17,492	374,781	97,553	1703,183
13,500	121893	13,507	-1,000	259,154	41,973	14778,207	9541,237	0,810	135,646	129,381	7,048	10,412	364,483	17,460	371,529	97,798	1715,382
13,700	123851	13,706	-1,000	259,174	41,973	14891,409	9565,510	0,811	135,545	129,151	7,152	10,282	361,259	17,433	368,408	98,046	1727,793
13,900	125814	13,905	-1,000	259,189	41,974	15004,767	9590,132	0,812	135,444	128,919	7,255	10,156	358,155	17,411	365,408	98,299	1740,387
14,100	127783	14,104	-1,000	259,201	41,975	15118,345	9615,118	0,813	135,341	128,687	7,359	10,034	355,164	17,394	362,521	98,555	1753,157



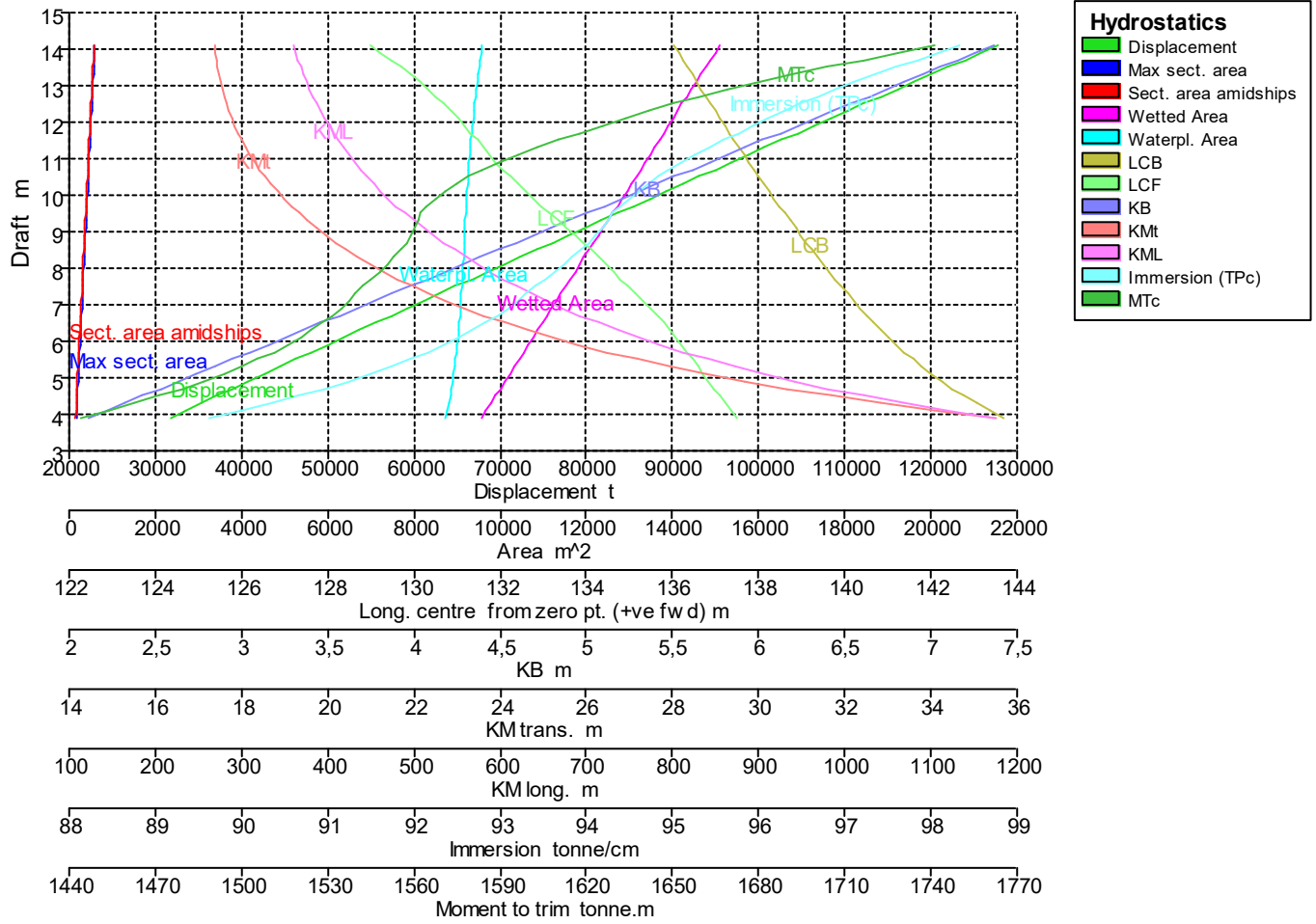
Fixed Trim = -1,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	31758	3,959	-1,500	258,918	41,612	9573,151	8744,861	0,745	143,705	137,501	2,115	33,373	1170,348	35,488	1172,443	89,635	1443,966
4,100	33555	4,158	-1,500	259,101	41,665	9685,093	8781,456	0,746	143,368	137,364	2,219	31,887	1115,556	34,106	1117,756	90,010	1453,725
4,300	35359	4,357	-1,500	259,264	41,704	9796,621	8815,255	0,748	143,058	137,227	2,323	30,521	1065,716	32,844	1068,021	90,356	1462,941
4,500	37170	4,556	-1,500	259,409	41,741	9907,315	8846,116	0,750	142,770	137,088	2,427	29,264	1019,932	31,691	1022,342	90,673	1471,294
4,700	38986	4,755	-1,500	259,535	41,769	10016,963	8875,127	0,752	142,501	136,966	2,531	28,105	978,010	30,636	980,525	90,970	1479,297
4,900	40809	4,955	-1,500	259,643	41,795	10125,949	8901,903	0,753	142,250	136,841	2,635	27,031	939,321	29,665	941,940	91,245	1486,722
5,100	42636	5,154	-1,500	259,709	41,817	10234,580	8927,234	0,755	142,015	136,716	2,739	26,036	903,612	28,774	906,335	91,504	1493,803
5,300	44469	5,353	-1,500	259,706	41,834	10342,185	8949,778	0,757	141,793	136,596	2,842	25,106	870,192	27,948	873,019	91,735	1499,936
5,500	46306	5,552	-1,500	259,696	41,851	10449,639	8971,080	0,759	141,584	136,471	2,946	24,240	839,174	27,185	842,106	91,954	1505,788
5,700	48147	5,752	-1,500	259,693	41,863	10556,908	8991,007	0,761	141,386	136,344	3,049	23,430	810,255	26,479	813,290	92,158	1511,279
5,900	49993	5,951	-1,500	259,686	41,874	10663,900	9009,101	0,763	141,197	136,214	3,153	22,671	783,070	25,823	786,209	92,343	1516,126
6,100	51841	6,150	-1,500	259,673	41,884	10770,729	9025,896	0,765	141,017	136,086	3,256	21,959	757,544	25,214	760,787	92,515	1520,528
6,300	53693	6,349	-1,500	259,655	41,891	10877,535	9041,274	0,767	140,844	135,952	3,359	21,289	733,496	24,648	736,842	92,673	1524,445
6,500	55548	6,549	-1,500	259,612	41,898	10984,286	9055,800	0,769	140,679	135,810	3,463	20,658	710,928	24,120	714,378	92,822	1528,190
6,700	57405	6,748	-1,500	259,361	41,905	11090,940	9069,493	0,771	140,520	135,654	3,566	20,062	689,719	23,628	693,273	92,962	1531,801
6,900	59265	6,947	-1,500	259,154	41,910	11197,909	9082,150	0,774	140,366	135,491	3,669	19,500	669,648	23,168	673,305	93,092	1535,051
7,100	61128	7,146	-1,500	258,977	41,914	11305,699	9093,510	0,776	140,215	135,315	3,772	18,967	650,553	22,739	654,313	93,208	1537,789
7,300	62994	7,345	-1,500	258,817	41,918	11414,980	9103,368	0,778	140,067	135,130	3,874	18,463	632,276	22,337	636,140	93,310	1539,841
7,500	64861	7,544	-1,500	258,671	41,922	11523,978	9113,302	0,780	139,921	134,953	3,977	17,985	615,098	21,962	619,065	93,411	1542,073
7,700	66730	7,743	-1,500	258,536	41,926	11631,260	9124,707	0,781	139,780	134,798	4,080	17,534	599,191	21,614	603,261	93,528	1545,183
7,900	68602	7,942	-1,500	258,405	41,929	11738,931	9135,715	0,783	139,641	134,635	4,182	17,106	584,080	21,289	588,252	93,641	1548,168
8,100	70476	8,141	-1,500	258,276	41,933	11846,916	9145,779	0,785	139,505	134,471	4,285	16,699	569,602	20,983	573,877	93,744	1550,749
8,300	72353	8,340	-1,500	258,148	41,936	11955,329	9155,492	0,787	139,372	134,301	4,388	16,311	555,804	20,698	560,182	93,844	1553,192
8,500	74231	8,539	-1,500	258,019	41,939	12064,271	9164,522	0,788	139,242	134,123	4,490	15,941	542,593	20,431	547,074	93,936	1555,367
8,700	76111	8,738	-1,500	257,887	41,941	12173,735	9173,064	0,790	139,113	133,939	4,593	15,589	529,947	20,181	534,530	94,024	1557,335
8,900	77992	8,936	-1,500	257,748	41,944	12283,805	9181,016	0,792	138,985	133,748	4,695	15,253	517,801	19,947	522,487	94,105	1559,016
9,100	79875	9,135	-1,500	257,600	41,946	12394,215	9188,556	0,793	138,859	133,556	4,797	14,932	506,160	19,729	510,949	94,183	1560,532
9,300	81760	9,334	-1,500	257,448	41,948	12504,713	9195,145	0,795	138,734	133,349	4,900	14,625	494,878	19,524	499,769	94,250	1561,523
9,500	83646	9,533	-1,500	257,282	41,950	12615,945	9201,240	0,797	138,610	133,135	5,002	14,332	484,024	19,333	489,018	94,313	1562,292

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPC) tonne/cm	MTc tonne.m
9,700	85533	9,732	-1,500	257,095	41,953	12726,271	9209,511	0,798	138,486	132,942	5,104	14,052	474,023	19,156	479,119	94,397	1564,355
9,900	87423	9,931	-1,500	256,880	41,954	12835,818	9219,658	0,800	138,364	132,767	5,206	13,784	464,776	18,989	469,974	94,501	1567,575
10,100	89314	10,130	-1,500	256,625	41,956	12945,758	9230,081	0,802	138,244	132,589	5,308	13,527	455,968	18,835	461,268	94,608	1571,011
10,300	91208	10,329	-1,500	256,319	41,957	13055,591	9240,924	0,804	138,124	132,414	5,410	13,280	447,593	18,690	452,996	94,719	1574,747
10,500	93104	10,528	-1,500	255,917	41,959	13164,557	9252,463	0,806	138,005	132,237	5,513	13,043	439,682	18,556	445,187	94,838	1578,982
10,700	95002	10,727	-1,500	255,279	41,960	13273,445	9264,170	0,809	137,888	132,059	5,615	12,816	432,105	18,430	437,712	94,958	1583,341
10,900	96903	10,926	-1,500	253,794	41,962	13380,526	9278,448	0,815	137,771	131,908	5,717	12,597	425,233	18,314	430,943	95,104	1589,309
11,100	98807	11,125	-1,500	253,868	41,963	13487,082	9294,003	0,816	137,656	131,765	5,819	12,387	418,820	18,206	424,632	95,264	1596,098
11,300	100714	11,324	-1,500	253,950	41,964	13593,806	9309,873	0,816	137,543	131,621	5,922	12,184	412,687	18,105	418,602	95,426	1603,101
11,500	102625	11,523	-1,500	254,041	41,965	13700,881	9326,148	0,817	137,431	131,474	6,024	11,989	406,835	18,013	412,852	95,593	1610,382
11,700	104539	11,722	-1,500	254,147	41,966	13808,178	9342,726	0,818	137,320	131,325	6,126	11,801	401,227	17,927	407,347	95,763	1617,861
11,900	106456	11,921	-1,500	254,275	41,967	13915,873	9359,710	0,818	137,210	131,173	6,229	11,620	395,870	17,849	402,092	95,937	1625,607
12,100	108377	12,120	-1,500	254,435	41,968	14023,853	9376,991	0,819	137,101	131,019	6,332	11,446	390,731	17,777	397,056	96,114	1633,548
12,300	110302	12,319	-1,500	254,640	41,969	14132,243	9394,656	0,819	136,993	130,862	6,434	11,277	385,812	17,712	392,239	96,295	1641,735
12,500	112230	12,519	-1,500	254,947	41,969	14210,610	9412,728	0,819	136,886	130,699	6,538	11,115	381,107	17,653	387,638	96,480	1650,189
12,700	114162	12,717	-1,500	255,463	41,970	14319,494	9431,699	0,818	136,780	130,526	6,641	10,959	376,677	17,599	383,311	96,675	1659,230
12,900	116097	12,916	-1,500	259,168	41,971	14429,147	9451,872	0,807	136,674	130,340	6,744	10,808	372,552	17,551	379,289	96,882	1669,056
13,100	118037	13,115	-1,500	259,165	41,972	14541,040	9474,123	0,808	136,568	130,128	6,847	10,662	368,852	17,509	375,693	97,110	1680,308
13,300	119981	13,314	-1,500	259,179	41,972	14653,566	9497,067	0,809	136,462	129,910	6,950	10,522	365,343	17,472	372,286	97,345	1691,971
13,500	121931	13,513	-1,500	259,196	41,973	14766,107	9520,592	0,810	136,355	129,688	7,053	10,387	362,003	17,440	369,050	97,586	1703,990
13,700	123885	13,711	-1,500	259,207	41,974	14878,933	9544,579	0,811	136,248	129,463	7,157	10,256	358,805	17,412	365,955	97,832	1716,274
13,900	125844	13,910	-1,500	259,216	41,974	14992,044	9569,005	0,812	136,141	129,235	7,260	10,130	355,736	17,390	362,991	98,082	1728,793
14,100	127808	14,109	-1,500	259,227	41,975	15105,469	9593,803	0,813	136,033	129,008	7,364	10,008	352,785	17,372	360,143	98,336	1741,512



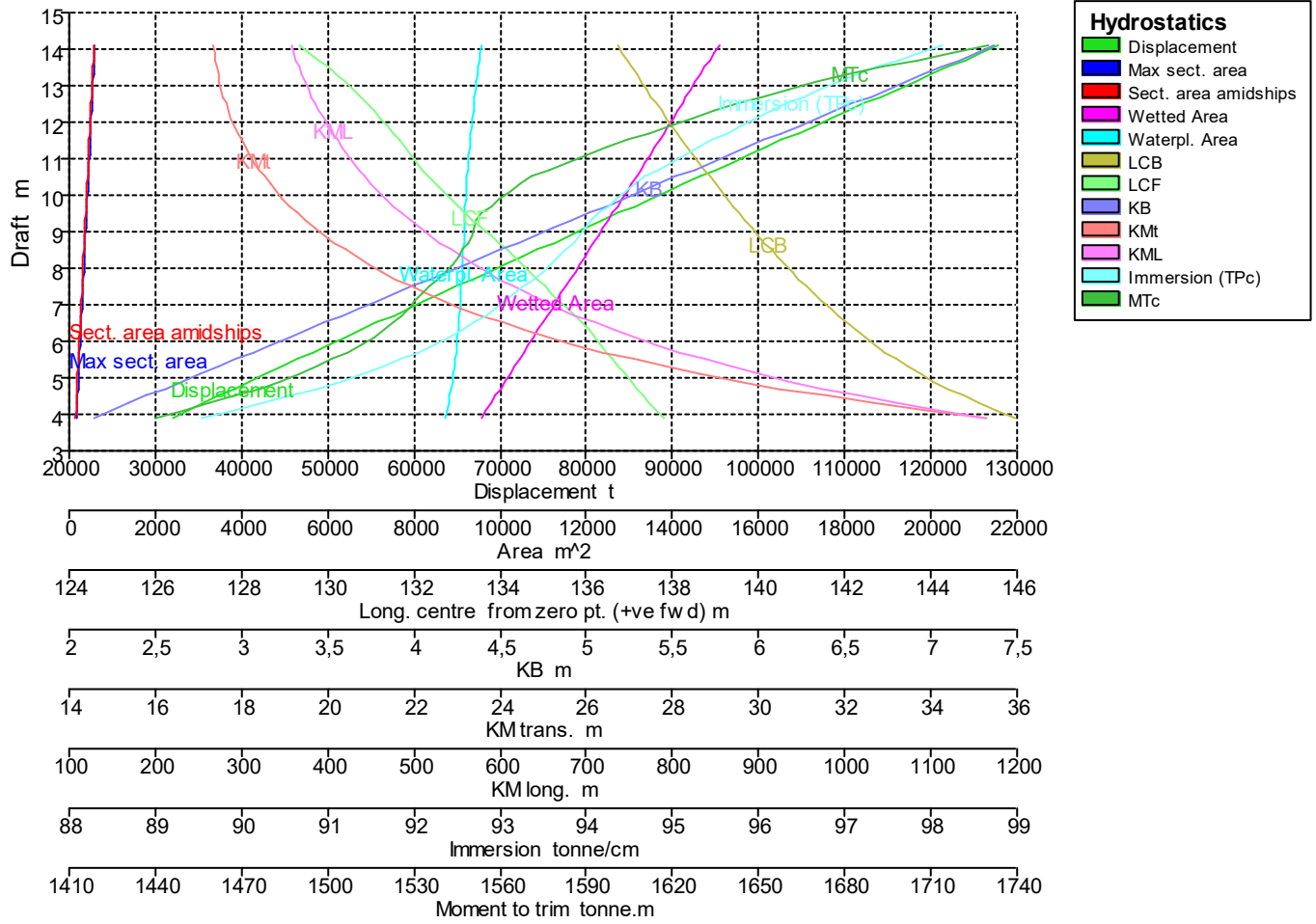
Fixed Trim = -2 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	31936	3,980	-2,000	258,925	41,632	9572,113	8735,670	0,749	145,949	137,792	2,141	33,139	1160,958	35,280	1163,063	89,541	1440,242
4,100	33730	4,179	-2,000	259,090	41,680	9684,866	8772,370	0,750	145,510	137,628	2,244	31,673	1107,093	33,917	1109,303	89,917	1450,103
4,300	35532	4,378	-2,000	259,235	41,718	9796,391	8805,485	0,752	145,105	137,470	2,348	30,322	1057,789	32,669	1060,104	90,256	1459,043
4,500	37341	4,577	-2,000	259,362	41,753	9907,136	8837,425	0,753	144,731	137,323	2,451	29,086	1012,976	31,536	1015,396	90,584	1467,867
4,700	39156	4,775	-2,000	259,471	41,779	10016,904	8866,288	0,755	144,384	137,178	2,554	27,940	971,586	30,493	974,110	90,879	1475,840
4,900	40976	4,974	-2,000	259,561	41,805	10125,973	8893,080	0,757	144,060	137,042	2,657	26,879	933,360	29,535	935,989	91,154	1483,228
5,100	42802	5,173	-2,000	259,631	41,823	10234,307	8917,664	0,758	143,756	136,899	2,760	25,892	897,871	28,652	900,604	91,406	1489,947
5,300	44633	5,372	-2,000	259,699	41,840	10342,452	8940,666	0,760	143,472	136,758	2,863	24,974	864,963	27,837	867,800	91,642	1496,281
5,500	46468	5,571	-2,000	259,696	41,856	10450,050	8961,510	0,762	143,203	136,623	2,966	24,117	834,125	27,083	837,066	91,855	1501,823
5,700	48307	5,770	-2,000	259,686	41,867	10557,426	8980,660	0,764	142,949	136,483	3,069	23,314	805,316	26,382	808,360	92,052	1506,911
5,900	50150	5,969	-2,000	259,671	41,878	10664,754	8998,756	0,766	142,708	136,339	3,172	22,563	778,406	25,734	781,554	92,237	1511,708
6,100	51997	6,168	-2,000	259,651	41,887	10771,976	9015,138	0,768	142,479	136,195	3,275	21,857	753,045	25,131	756,297	92,405	1515,889
6,300	53847	6,367	-2,000	259,624	41,894	10879,183	9030,005	0,769	142,261	136,049	3,378	21,192	729,113	24,569	732,469	92,558	1519,520
6,500	55699	6,565	-2,000	259,589	41,901	10986,594	9043,501	0,771	142,052	135,897	3,480	20,566	706,500	24,046	709,958	92,696	1522,648
6,700	57554	6,764	-2,000	259,549	41,907	11094,279	9055,872	0,773	141,851	135,738	3,583	19,976	685,105	23,559	688,667	92,823	1525,323
6,900	59411	6,963	-2,000	259,315	41,911	11201,937	9067,422	0,775	141,658	135,560	3,686	19,418	664,998	23,103	668,663	92,941	1527,960
7,100	61271	7,161	-2,000	259,081	41,915	11310,560	9077,470	0,777	141,471	135,367	3,788	18,890	645,799	22,677	649,567	93,044	1529,920
7,300	63132	7,360	-2,000	258,878	41,920	11418,042	9088,558	0,779	141,289	135,193	3,891	18,391	628,010	22,281	631,881	93,158	1532,633
7,500	64997	7,559	-2,000	258,696	41,923	11525,387	9100,309	0,781	141,111	135,033	3,993	17,920	611,361	21,912	615,335	93,278	1535,741
7,700	66864	7,757	-2,000	258,527	41,927	11632,973	9111,220	0,783	140,939	134,871	4,095	17,473	595,492	21,567	599,569	93,390	1538,529
7,900	68733	7,956	-2,000	258,367	41,930	11740,985	9121,419	0,785	140,771	134,704	4,197	17,047	580,359	21,244	584,539	93,495	1541,043
8,100	70604	8,155	-2,000	258,211	41,934	11849,423	9131,310	0,787	140,608	134,531	4,300	16,643	565,977	20,942	570,259	93,596	1543,476
8,300	72477	8,353	-2,000	258,056	41,937	11958,331	9140,244	0,788	140,448	134,353	4,402	16,258	552,163	20,659	556,548	93,688	1545,472
8,500	74352	8,552	-2,000	257,901	41,939	12067,789	9148,659	0,790	140,292	134,169	4,504	15,891	538,952	20,394	543,439	93,774	1547,245
8,700	76229	8,750	-2,000	257,742	41,942	12177,838	9156,415	0,792	140,139	133,978	4,606	15,541	526,280	20,146	530,870	93,853	1548,739
8,900	78107	8,949	-2,000	257,575	41,945	12288,054	9164,061	0,793	139,988	133,782	4,708	15,207	514,204	19,915	518,896	93,932	1550,236
9,100	79986	9,147	-2,000	257,399	41,947	12398,600	9170,474	0,795	139,839	133,575	4,810	14,888	502,472	19,698	507,266	93,997	1551,078
9,300	81867	9,346	-2,000	257,207	41,949	12509,853	9176,358	0,797	139,692	133,361	4,912	14,584	491,184	19,495	496,081	94,058	1551,658
9,500	83749	9,544	-2,000	257,000	41,951	12619,322	9185,121	0,798	139,548	133,185	5,014	14,293	480,904	19,307	485,903	94,147	1553,923

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
9,700	85634	9,743	-2,000	256,769	41,953	12728,545	9194,757	0,800	139,406	133,018	5,116	14,015	471,232	19,130	476,333	94,246	1556,763
9,900	87520	9,942	-2,000	256,498	41,955	12838,147	9204,633	0,802	139,266	132,849	5,218	13,748	462,015	18,965	467,219	94,347	1559,788
10,100	89408	10,140	-2,000	256,165	41,956	12947,228	9215,274	0,804	139,128	132,683	5,319	13,493	453,329	18,812	458,635	94,457	1563,359
10,300	91299	10,339	-2,000	255,717	41,958	13055,713	9226,030	0,807	138,993	132,513	5,421	13,247	445,024	18,668	450,432	94,567	1567,061
10,500	93192	10,538	-2,000	254,911	41,959	13163,924	9237,455	0,810	138,859	132,347	5,523	13,012	437,161	18,534	442,670	94,684	1571,198
10,700	95087	10,737	-2,000	253,725	41,961	13270,010	9251,784	0,815	138,727	132,211	5,625	12,785	430,081	18,410	435,693	94,831	1577,151
10,900	96985	10,935	-2,000	253,787	41,962	13376,005	9266,716	0,816	138,598	132,077	5,727	12,567	423,368	18,294	429,082	94,984	1583,507
11,100	98887	11,134	-2,000	253,853	41,963	13482,174	9281,949	0,816	138,470	131,942	5,829	12,357	416,954	18,186	422,770	95,140	1590,091
11,300	100792	11,333	-2,000	253,924	41,964	13588,678	9297,623	0,817	138,345	131,803	5,931	12,155	410,841	18,086	416,760	95,301	1596,976
11,500	102700	11,532	-2,000	254,003	41,965	13695,386	9313,615	0,818	138,222	131,662	6,033	11,961	404,992	17,994	411,013	95,465	1604,074
11,700	104611	11,731	-2,000	254,093	41,966	13802,436	9329,956	0,818	138,100	131,518	6,136	11,774	399,399	17,909	405,523	95,632	1611,416
11,900	106526	11,930	-2,000	254,195	41,967	13909,773	9346,646	0,819	137,980	131,372	6,238	11,593	394,046	17,831	400,272	95,803	1618,985
12,100	108444	12,129	-2,000	254,314	41,968	14017,405	9363,678	0,819	137,861	131,223	6,340	11,419	388,918	17,759	395,246	95,978	1626,780
12,300	110366	12,328	-2,000	254,461	41,969	14125,771	9380,908	0,820	137,744	131,069	6,443	11,251	383,984	17,694	390,416	96,154	1634,711
12,500	112291	12,526	-2,000	254,655	41,970	14234,869	9398,499	0,820	137,627	130,914	6,546	11,089	379,255	17,635	385,789	96,335	1642,865
12,700	114220	12,725	-2,000	254,927	41,971	14313,525	9416,618	0,820	137,512	130,755	6,649	10,933	374,744	17,582	381,381	96,520	1651,356
12,900	116152	12,924	-2,000	255,369	41,971	14421,795	9435,655	0,820	137,398	130,586	6,751	10,783	370,502	17,534	377,242	96,715	1660,447
13,100	118089	13,122	-2,000	256,329	41,972	14530,856	9455,653	0,818	137,285	130,408	6,854	10,637	366,516	17,491	373,359	96,920	1670,158
13,300	120029	13,321	-2,000	259,230	41,973	14642,076	9477,681	0,809	137,172	130,204	6,957	10,497	362,938	17,454	369,884	97,146	1681,255
13,500	121975	13,519	-2,000	259,231	41,973	14754,187	9500,688	0,810	137,059	129,990	7,060	10,362	359,587	17,422	366,636	97,382	1692,978
13,700	123924	13,717	-2,000	259,237	41,974	14866,885	9524,299	0,811	136,947	129,772	7,164	10,231	356,399	17,394	363,551	97,624	1705,060
13,900	125879	13,916	-2,000	259,245	41,974	14979,764	9548,450	0,812	136,833	129,550	7,267	10,105	353,357	17,372	360,613	97,872	1717,461
14,100	127839	14,114	-2,000	259,255	41,975	15092,911	9572,995	0,813	136,720	129,326	7,370	9,983	350,433	17,353	357,793	98,123	1730,073



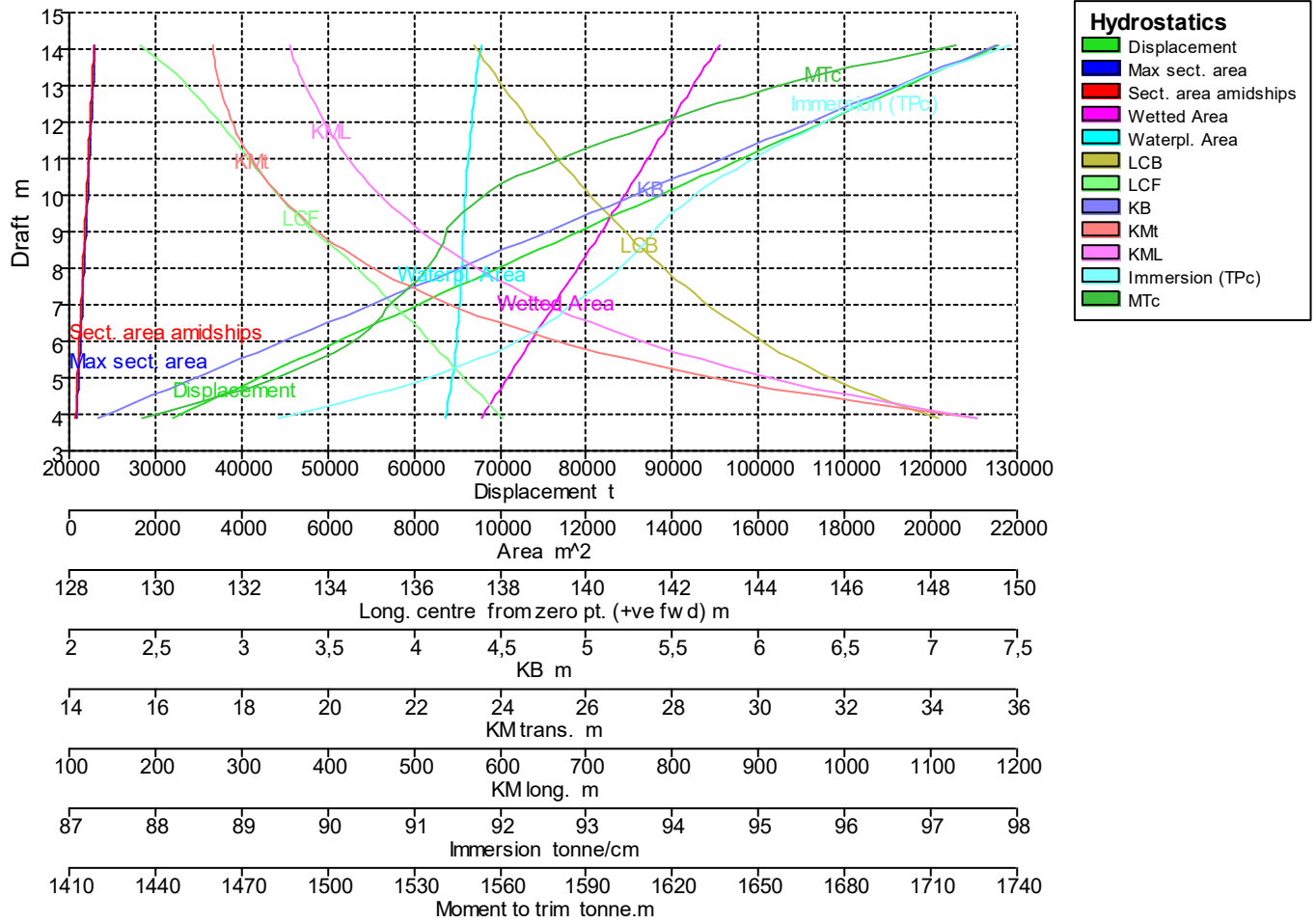
Fixed Trim = -2,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPC) tonne/cm	MTC tonne.m
3,900	32118	4,003	-2,500	258,898	41,652	9570,591	8724,100	0,753	148,162	138,082	2,172	32,892	1150,646	35,062	1152,763	89,422	1435,442
4,100	33910	4,201	-2,500	259,047	41,694	9683,817	8761,207	0,754	147,623	137,891	2,274	31,448	1097,895	33,720	1100,116	89,802	1445,570
4,300	35710	4,400	-2,500	259,175	41,732	9795,545	8795,478	0,756	147,127	137,720	2,376	30,122	1049,705	32,497	1052,030	90,154	1454,982
4,500	37516	4,598	-2,500	259,285	41,763	9906,227	8826,821	0,757	146,670	137,555	2,478	28,899	1005,393	31,376	1007,823	90,475	1463,573
4,700	39329	4,796	-2,500	259,378	41,788	10016,109	8856,025	0,759	146,245	137,392	2,580	27,769	964,679	30,348	967,213	90,774	1471,684
4,900	41148	4,995	-2,500	259,452	41,812	10125,390	8882,719	0,760	145,849	137,231	2,683	26,722	926,893	29,403	929,531	91,048	1478,951
5,100	42971	5,193	-2,500	259,529	41,829	10233,953	8907,102	0,762	145,480	137,078	2,785	25,746	891,828	28,529	894,570	91,298	1485,608
5,300	44800	5,392	-2,500	259,604	41,847	10342,308	8929,755	0,763	145,133	136,922	2,887	24,838	859,200	27,724	862,046	91,530	1491,708
5,500	46633	5,590	-2,500	259,670	41,860	10450,389	8950,749	0,765	144,806	136,765	2,990	23,990	828,782	26,979	831,732	91,745	1497,329
5,700	48470	5,789	-2,500	259,670	41,871	10558,034	8969,545	0,767	144,498	136,613	3,092	23,196	800,179	26,287	803,232	91,938	1502,167
5,900	50310	5,987	-2,500	259,647	41,882	10665,674	8986,956	0,768	144,206	136,459	3,194	22,451	773,374	25,645	776,531	92,116	1506,558
6,100	52154	6,186	-2,500	259,619	41,890	10773,394	9003,053	0,770	143,929	136,298	3,297	21,752	748,218	25,048	751,479	92,281	1510,566
6,300	54002	6,384	-2,500	259,583	41,896	10881,228	9017,499	0,772	143,665	136,134	3,399	21,094	724,437	24,492	727,801	92,429	1513,948
6,500	55852	6,582	-2,500	259,540	41,903	10989,336	9030,259	0,773	143,412	135,967	3,501	20,473	701,873	23,973	705,340	92,560	1516,639
6,700	57704	6,781	-2,500	259,491	41,908	11097,840	9041,660	0,775	143,171	135,793	3,603	19,888	680,482	23,490	684,052	92,677	1518,788
6,900	59558	6,979	-2,500	259,436	41,913	11207,260	9051,471	0,777	142,938	135,609	3,705	19,335	660,114	23,039	663,787	92,778	1520,284
7,100	61414	7,177	-2,500	259,236	41,917	11314,252	9063,127	0,779	142,715	135,439	3,807	18,814	641,468	22,620	645,244	92,897	1523,029
7,300	63273	7,376	-2,500	258,971	41,921	11420,750	9075,126	0,781	142,499	135,275	3,909	18,321	624,014	22,229	627,893	93,020	1526,092
7,500	65134	7,574	-2,500	258,741	41,924	11527,487	9086,512	0,783	142,291	135,107	4,011	17,854	607,464	21,864	611,446	93,137	1528,990
7,700	66998	7,772	-2,500	258,532	41,928	11635,353	9097,098	0,785	142,089	134,935	4,113	17,410	591,678	21,522	595,763	93,245	1531,556
7,900	68864	7,971	-2,500	258,337	41,931	11743,774	9106,838	0,786	141,892	134,762	4,215	16,988	576,591	21,202	580,778	93,345	1533,766
8,100	70732	8,169	-2,500	258,148	41,935	11852,674	9115,918	0,788	141,702	134,582	4,316	16,587	562,177	20,903	566,466	93,438	1535,693
8,300	72602	8,367	-2,500	257,962	41,937	11962,218	9124,395	0,790	141,515	134,394	4,418	16,205	548,411	20,622	552,803	93,525	1537,407
8,500	74474	8,565	-2,500	257,776	41,940	12072,275	9132,138	0,792	141,334	134,202	4,520	15,841	535,201	20,360	539,696	93,604	1538,775
8,700	76347	8,763	-2,500	257,585	41,943	12182,240	9139,492	0,793	141,156	134,007	4,622	15,493	522,579	20,114	527,175	93,680	1540,007
8,900	78221	8,961	-2,500	257,386	41,946	12292,750	9145,802	0,795	140,982	133,800	4,723	15,162	510,371	19,885	515,070	93,744	1540,702
9,100	80097	9,159	-2,500	257,172	41,948	12403,965	9151,836	0,797	140,811	133,584	4,825	14,846	498,692	19,670	503,492	93,806	1541,300

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
9,300	81974	9,358	-2,500	256,940	41,950	12512,846	9161,350	0,799	140,643	133,420	4,926	14,544	488,170	19,469	493,073	93,904	1543,950
9,500	83854	9,556	-2,500	256,680	41,952	12622,032	9171,014	0,800	140,479	133,254	5,028	14,255	478,148	19,282	483,152	94,003	1546,741
9,700	85735	9,754	-2,500	256,381	41,954	12731,348	9180,505	0,802	140,319	133,092	5,129	13,979	468,533	19,107	473,639	94,100	1549,474
9,900	87618	9,953	-2,500	256,019	41,955	12839,676	9190,904	0,804	140,161	132,936	5,231	13,713	459,495	18,943	464,703	94,207	1552,822
10,100	89504	10,151	-2,500	255,522	41,957	12947,766	9200,891	0,807	140,007	132,772	5,332	13,459	450,772	18,791	456,082	94,309	1555,991
10,300	91391	10,350	-2,500	253,630	41,958	13055,147	9212,401	0,814	139,855	132,621	5,434	13,215	442,665	18,648	448,077	94,427	1560,132
10,500	93282	10,548	-2,500	253,679	41,960	13160,492	9226,476	0,815	139,707	132,497	5,535	12,980	435,305	18,515	440,819	94,571	1565,863
10,700	95175	10,747	-2,500	253,734	41,961	13266,021	9240,831	0,816	139,562	132,372	5,637	12,754	428,279	18,391	433,896	94,719	1571,816
10,900	97071	10,946	-2,500	253,788	41,962	13371,755	9255,531	0,816	139,420	132,244	5,739	12,537	421,577	18,276	427,295	94,869	1578,018
11,100	98970	11,145	-2,500	253,848	41,963	13477,721	9270,607	0,817	139,280	132,113	5,841	12,329	415,185	18,169	421,006	95,024	1584,495
11,300	100872	11,343	-2,500	253,912	41,965	13583,881	9285,935	0,818	139,143	131,981	5,943	12,127	409,065	18,069	414,988	95,181	1591,160
11,500	102778	11,542	-2,500	253,980	41,966	13690,378	9301,671	0,818	139,009	131,845	6,045	11,933	403,225	17,977	409,250	95,342	1598,103
11,700	104687	11,741	-2,500	254,057	41,967	13797,121	9317,761	0,819	138,876	131,707	6,147	11,747	397,639	17,893	403,766	95,507	1605,285
11,900	106599	11,939	-2,500	254,143	41,967	13904,098	9334,128	0,820	138,746	131,566	6,249	11,567	392,283	17,815	398,513	95,675	1612,659
12,100	108515	12,138	-2,500	254,240	41,968	14012,010	9350,733	0,820	138,617	131,420	6,351	11,393	387,140	17,743	393,473	95,845	1620,201
12,300	110434	12,336	-2,500	254,355	41,969	14120,227	9367,703	0,821	138,490	131,272	6,453	11,226	382,213	17,678	388,648	96,019	1627,972
12,500	112356	12,535	-2,500	254,492	41,970	14228,471	9385,123	0,821	138,365	131,122	6,556	11,064	377,506	17,619	384,043	96,198	1636,037
12,700	114282	12,734	-2,500	254,670	41,971	14336,947	9402,869	0,822	138,241	130,971	6,658	10,908	372,986	17,566	379,626	96,379	1644,300
12,900	116212	12,932	-2,500	254,915	41,971	14445,747	9421,018	0,822	138,118	130,816	6,761	10,758	368,656	17,518	375,399	96,565	1652,817
13,100	118145	13,130	-2,500	255,298	41,972	14523,691	9440,082	0,821	137,998	130,652	6,864	10,613	364,584	17,476	371,430	96,761	1661,933
13,300	120083	13,329	-2,500	256,014	41,973	14632,387	9459,988	0,820	137,878	130,479	6,966	10,473	360,742	17,438	367,691	96,965	1671,589
13,500	122024	13,527	-2,500	259,275	41,973	14743,081	9481,742	0,810	137,759	130,285	7,069	10,337	357,268	17,406	364,319	97,188	1682,490
13,700	123970	13,725	-2,500	259,273	41,974	14855,167	9504,828	0,811	137,640	130,075	7,172	10,207	354,066	17,378	361,222	97,424	1694,272
13,900	125921	13,923	-2,500	259,278	41,974	14967,874	9528,498	0,812	137,521	129,861	7,275	10,081	351,020	17,355	358,278	97,667	1706,407
14,100	127876	14,121	-2,500	259,286	41,975	15080,719	9552,780	0,813	137,402	129,642	7,378	9,959	348,120	17,337	355,482	97,916	1718,899



Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

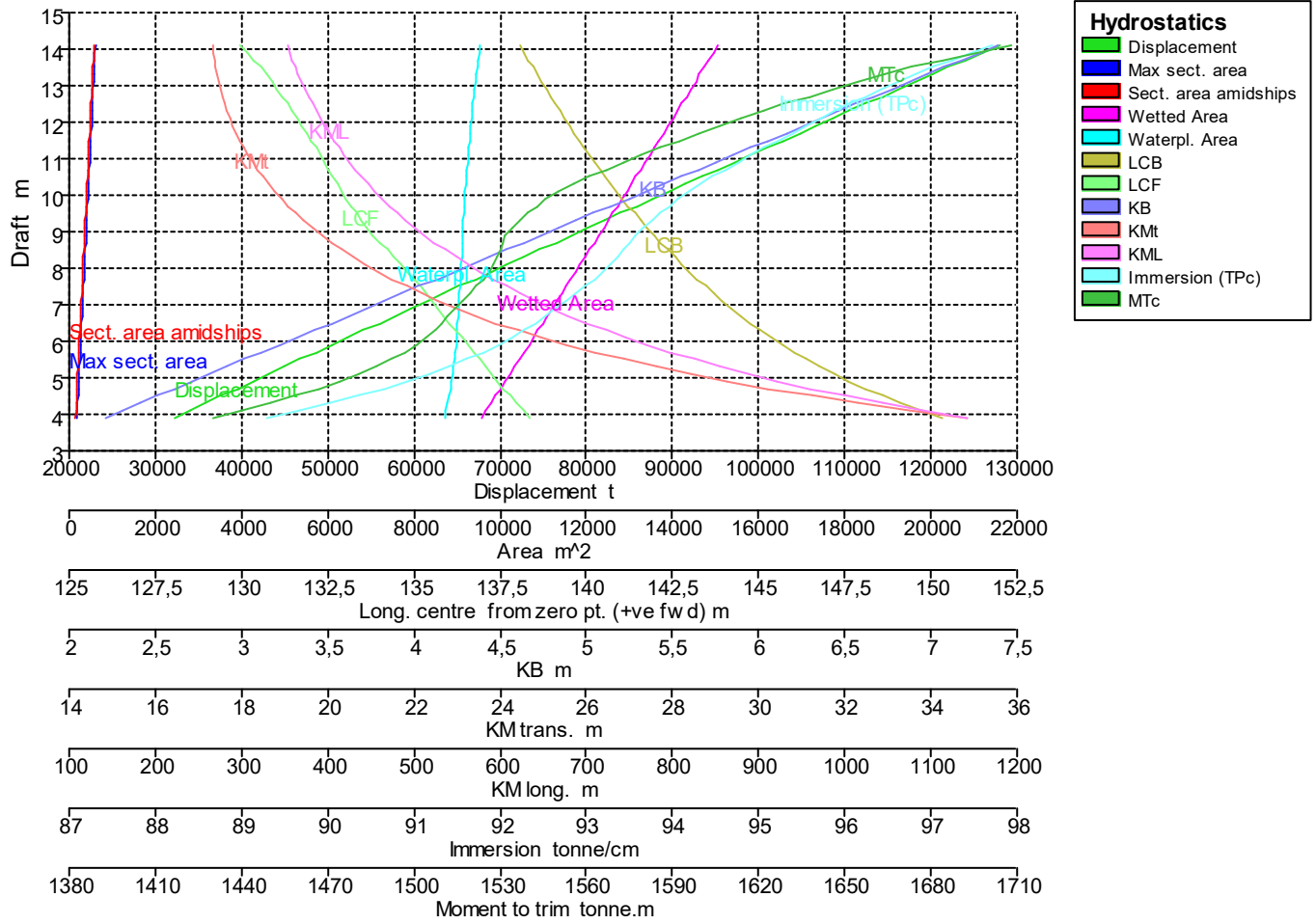
Fixed Trim = -3 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	32305	4,027	-3,000	258,839	41,670	9568,343	8711,011	0,758	150,341	138,373	2,206	32,636	1139,763	34,840	1141,891	89,288	1429,978
4,100	34095	4,225	-3,000	258,972	41,708	9681,632	8748,653	0,759	149,707	138,168	2,307	31,216	1088,148	33,521	1090,380	89,674	1440,360
4,300	35892	4,423	-3,000	259,084	41,746	9794,023	8783,695	0,760	149,123	137,968	2,408	29,914	1040,985	32,320	1043,321	90,033	1450,078
4,500	37696	4,620	-3,000	259,179	41,772	9904,742	8815,063	0,761	148,584	137,784	2,509	28,707	997,396	31,215	999,836	90,354	1458,710
4,700	39506	4,818	-3,000	259,261	41,798	10014,876	8843,887	0,762	148,084	137,602	2,611	27,591	957,151	30,200	959,695	90,650	1466,598
4,900	41322	5,016	-3,000	259,346	41,819	10124,515	8870,967	0,764	147,619	137,423	2,712	26,559	920,025	29,269	922,673	90,927	1474,045
5,100	43143	5,214	-3,000	259,424	41,836	10233,550	8895,244	0,765	147,184	137,248	2,813	25,595	885,378	28,407	888,130	91,176	1480,596
5,300	44969	5,412	-3,000	259,495	41,853	10342,077	8917,701	0,766	146,777	137,079	2,915	24,698	853,107	27,612	855,963	91,406	1486,560
5,500	46799	5,610	-3,000	259,557	41,864	10450,495	8938,251	0,768	146,393	136,907	3,017	23,859	822,963	26,874	825,923	91,617	1491,963
5,700	48634	5,808	-3,000	259,608	41,875	10558,832	8957,348	0,769	146,032	136,734	3,118	23,075	794,762	26,192	797,825	91,813	1496,882
5,900	50472	6,006	-3,000	259,614	41,885	10666,891	8974,163	0,771	145,689	136,566	3,220	22,338	768,114	25,556	771,281	91,985	1500,943
6,100	52313	6,204	-3,000	259,577	41,892	10775,160	8989,489	0,772	145,364	136,393	3,321	21,645	743,028	24,965	746,298	92,142	1504,476
6,300	54158	6,402	-3,000	259,533	41,899	10883,849	9003,313	0,774	145,055	136,209	3,423	20,993	719,364	24,415	722,737	92,284	1507,505
6,500	56005	6,600	-3,000	259,481	41,906	10992,879	9015,545	0,776	144,760	136,022	3,524	20,379	696,910	23,902	700,386	92,409	1509,851
6,700	57854	6,797	-3,000	259,422	41,910	11102,588	9025,833	0,777	144,477	135,829	3,626	19,799	675,515	23,423	679,094	92,515	1511,420
6,900	59705	6,996	-3,000	259,357	41,914	11209,772	9038,244	0,779	144,207	135,671	3,727	19,254	655,938	22,980	659,619	92,642	1514,214
7,100	61559	7,194	-3,000	259,282	41,919	11316,955	9049,899	0,780	143,948	135,514	3,829	18,739	637,400	22,566	641,184	92,761	1516,747
7,300	63415	7,392	-3,000	259,118	41,922	11423,968	9061,216	0,782	143,699	135,348	3,930	18,251	619,937	22,179	623,824	92,877	1519,326
7,500	65274	7,590	-3,000	258,820	41,925	11531,162	9071,971	0,784	143,460	135,174	4,031	17,787	603,410	21,817	607,400	92,988	1521,826
7,700	67134	7,788	-3,000	258,558	41,929	11638,810	9082,134	0,786	143,228	134,993	4,133	17,347	587,694	21,479	591,786	93,092	1524,114
7,900	68997	7,985	-3,000	258,319	41,932	11747,375	9091,541	0,788	143,004	134,808	4,234	16,929	572,690	21,162	576,885	93,188	1526,104
8,100	70861	8,183	-3,000	258,090	41,936	11856,903	9099,968	0,790	142,785	134,620	4,335	16,531	558,288	20,865	562,585	93,275	1527,632
8,300	72728	8,381	-3,000	257,867	41,938	11966,860	9108,074	0,792	142,573	134,431	4,437	16,152	544,587	20,587	548,986	93,358	1529,103
8,500	74596	8,579	-3,000	257,644	41,941	12076,815	9115,053	0,793	142,366	134,227	4,538	15,791	531,362	20,327	535,863	93,429	1530,007
8,700	76465	8,776	-3,000	257,415	41,944	12187,370	9121,475	0,795	142,164	134,018	4,639	15,447	518,681	20,084	523,284	93,495	1530,651
8,900	78336	8,974	-3,000	257,175	41,946	12297,841	9128,193	0,797	141,967	133,817	4,740	15,118	506,679	19,857	511,384	93,564	1531,560
9,100	80209	9,172	-3,000	256,918	41,948	12406,629	9137,675	0,799	141,775	133,654	4,841	14,804	495,737	19,645	500,544	93,661	1534,093
9,300	82083	9,370	-3,000	256,631	41,950	12515,732	9147,381	0,801	141,587	133,488	4,942	14,505	485,347	19,446	490,255	93,761	1536,843
9,500	83959	9,568	-3,000	256,297	41,952	12624,919	9156,997	0,803	141,404	133,327	5,043	14,217	475,408	19,260	480,419	93,859	1539,604

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
9,700	85838	9,766	-3,000	255,888	41,954	12732,808	9167,443	0,805	141,225	133,173	5,145	13,943	466,053	19,086	471,166	93,966	1542,920
9,900	87718	9,964	-3,000	255,305	41,956	12840,612	9177,068	0,808	141,050	133,014	5,246	13,679	456,964	18,923	462,178	94,065	1545,821
10,100	89601	10,163	-3,000	253,605	41,957	12946,891	9188,976	0,814	140,880	132,881	5,347	13,426	448,639	18,772	453,955	94,187	1550,120
10,300	91486	10,361	-3,000	253,650	41,959	13051,847	9202,448	0,815	140,713	132,766	5,448	13,182	440,919	18,630	446,336	94,325	1555,418
10,500	93374	10,560	-3,000	253,697	41,960	13157,006	9216,311	0,816	140,551	132,648	5,550	12,949	433,573	18,497	439,093	94,467	1561,012
10,700	95265	10,759	-3,000	253,745	41,962	13262,328	9230,485	0,816	140,392	132,528	5,651	12,724	426,563	18,374	432,184	94,612	1566,830
10,900	97159	10,957	-3,000	253,797	41,963	13367,841	9244,983	0,817	140,237	132,406	5,752	12,508	419,876	18,260	425,599	94,761	1572,904
11,100	99056	11,156	-3,000	253,850	41,964	13473,538	9259,711	0,818	140,086	132,282	5,854	12,300	413,472	18,153	419,297	94,912	1579,148
11,300	100956	11,354	-3,000	253,909	41,965	13579,546	9274,884	0,818	139,937	132,154	5,956	12,099	407,373	18,054	413,301	95,068	1585,712
11,500	102859	11,553	-3,000	253,970	41,966	13685,729	9290,308	0,819	139,791	132,024	6,057	11,906	401,528	17,963	407,558	95,226	1592,456
11,700	104766	11,751	-3,000	254,036	41,967	13792,224	9306,054	0,820	139,648	131,891	6,159	11,720	395,935	17,878	402,066	95,387	1599,422
11,900	106676	11,949	-3,000	254,111	41,968	13899,668	9322,013	0,820	139,508	131,753	6,261	11,541	390,565	17,801	396,799	95,551	1606,553
12,100	108589	12,148	-3,000	254,193	41,968	14007,118	9338,341	0,821	139,369	131,615	6,363	11,368	385,423	17,730	391,759	95,718	1613,916
12,300	110505	12,346	-3,000	254,284	41,969	14114,734	9355,177	0,822	139,233	131,472	6,465	11,201	380,521	17,665	386,960	95,891	1621,617
12,500	112425	12,544	-3,000	254,394	41,970	14222,446	9372,282	0,822	139,099	131,328	6,567	11,039	375,810	17,606	382,351	96,066	1629,484
12,700	114348	12,743	-3,000	254,525	41,971	14330,515	9389,830	0,822	138,966	131,181	6,669	10,884	371,307	17,552	377,950	96,246	1637,641
12,900	116275	12,941	-3,000	254,684	41,972	14438,713	9407,673	0,823	138,835	131,033	6,772	10,734	366,976	17,505	373,722	96,429	1645,975
13,100	118206	13,139	-3,000	254,900	41,972	14547,411	9425,967	0,823	138,706	130,881	6,874	10,589	362,834	17,462	369,683	96,616	1654,597
13,300	120141	13,337	-3,000	255,225	41,973	14625,594	9444,978	0,823	138,579	130,723	6,977	10,449	358,909	17,425	365,861	96,811	1663,679
13,500	122079	13,535	-3,000	255,813	41,973	14734,177	9464,912	0,822	138,453	130,555	7,079	10,314	355,218	17,393	362,273	97,015	1673,354
13,700	124021	13,733	-3,000	259,321	41,974	14844,252	9486,271	0,812	138,328	130,371	7,182	10,183	351,824	17,365	358,982	97,234	1683,984
13,900	125968	13,931	-3,000	259,317	41,974	14956,268	9509,432	0,812	138,203	130,165	7,285	10,057	348,764	17,342	356,024	97,472	1695,820
14,100	127920	14,128	-3,000	259,321	41,975	15068,957	9533,182	0,813	138,079	129,955	7,388	9,936	345,852	17,323	353,216	97,715	1708,017



Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

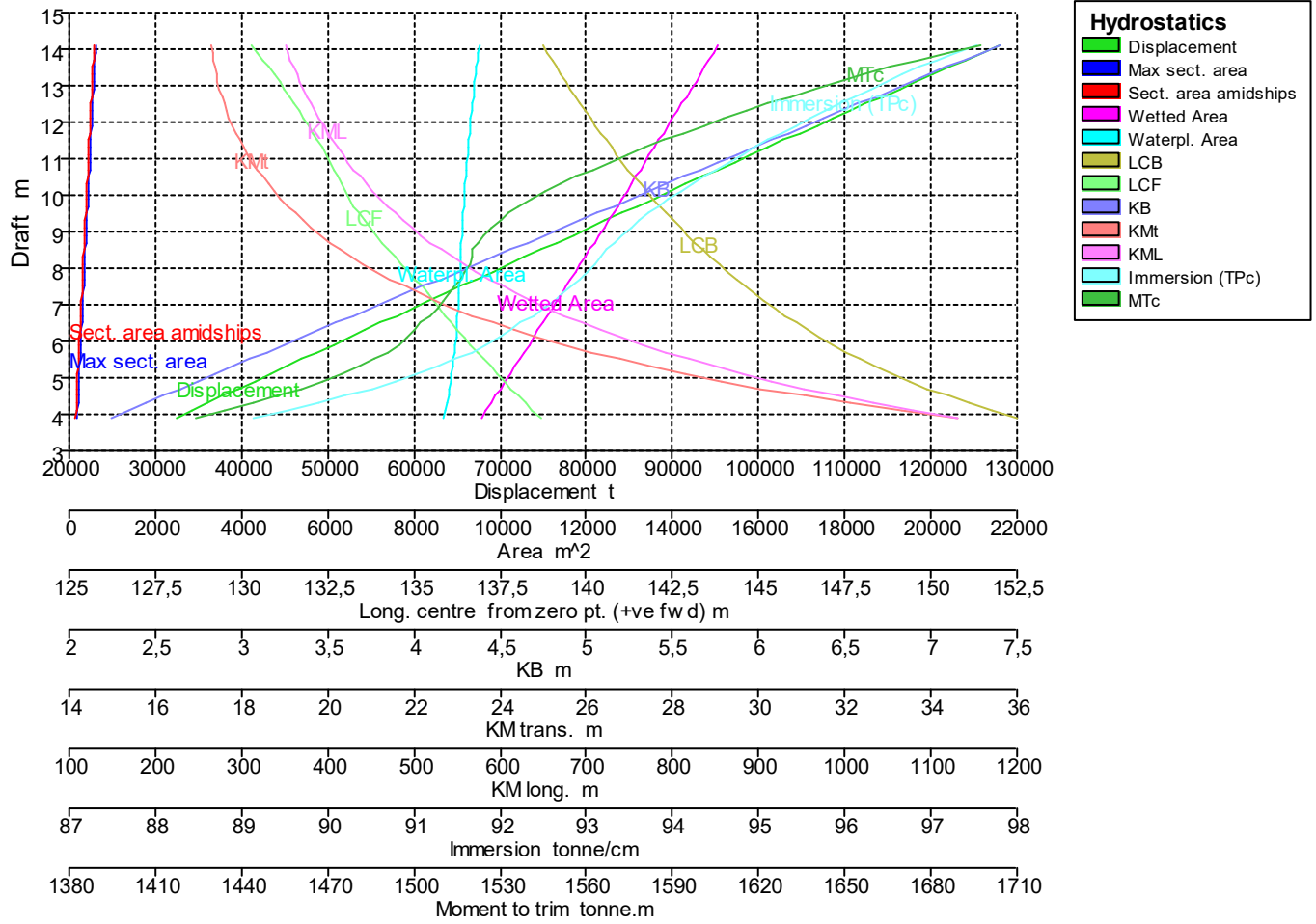
Fixed Trim = -3,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	32497	4,053	-3,500	258,747	41,684	9565,179	8696,609	0,762	152,486	138,670	2,246	32,374	1128,319	34,616	1130,459	89,140	1423,850
4,100	34284	4,249	-3,500	258,865	41,722	9678,878	8734,555	0,763	151,759	138,443	2,345	30,978	1077,801	33,320	1080,044	89,529	1434,390
4,300	36078	4,446	-3,500	258,963	41,756	9791,233	8769,471	0,764	151,091	138,223	2,444	29,694	1031,468	32,136	1033,816	89,887	1444,085
4,500	37879	4,643	-3,500	259,055	41,782	9902,965	8801,692	0,765	150,473	138,007	2,544	28,510	988,845	31,052	991,296	90,217	1453,049
4,700	39686	4,841	-3,500	259,149	41,808	10013,388	8830,736	0,766	149,900	137,809	2,644	27,411	949,271	30,053	951,826	90,515	1460,983
4,900	41499	5,038	-3,500	259,232	41,825	10123,308	8857,202	0,767	149,367	137,612	2,745	26,389	912,561	29,132	915,220	90,786	1468,185
5,100	43318	5,235	-3,500	259,307	41,842	10232,857	8882,018	0,769	148,869	137,418	2,845	25,441	878,530	28,284	881,292	91,041	1474,910
5,300	45141	5,433	-3,500	259,374	41,857	10341,976	8904,298	0,770	148,402	137,229	2,946	24,555	846,649	27,498	849,515	91,269	1480,764
5,500	46968	5,630	-3,500	259,430	41,868	10450,724	8924,562	0,771	147,963	137,043	3,046	23,726	816,817	26,770	819,786	91,477	1485,983
5,700	48800	5,828	-3,500	259,477	41,879	10559,622	8943,193	0,772	147,549	136,854	3,147	22,950	788,848	26,095	791,921	91,668	1490,630
5,900	50635	6,025	-3,500	259,515	41,888	10668,576	8960,103	0,774	147,157	136,662	3,248	22,222	762,542	25,468	765,718	91,841	1494,683
6,100	52474	6,222	-3,500	259,526	41,895	10777,691	8974,580	0,775	146,785	136,470	3,348	21,537	737,538	24,883	740,818	91,989	1497,736
6,300	54315	6,420	-3,500	259,471	41,901	10887,285	8987,368	0,776	146,432	136,272	3,449	20,891	713,875	24,338	717,257	92,121	1500,130
6,500	56158	6,617	-3,500	259,410	41,907	10997,052	8999,366	0,778	146,094	136,070	3,550	20,284	691,639	23,832	695,124	92,244	1502,332
6,700	58005	6,815	-3,500	259,341	41,912	11104,429	9012,848	0,779	145,772	135,905	3,651	19,713	671,205	23,362	674,793	92,382	1505,500
6,900	59854	7,012	-3,500	259,266	41,916	11211,881	9025,192	0,781	145,465	135,740	3,752	19,174	651,803	22,923	655,493	92,508	1508,210
7,100	61705	7,210	-3,500	259,178	41,920	11319,607	9036,540	0,782	145,170	135,573	3,852	18,663	633,374	22,514	637,167	92,625	1510,537
7,300	63558	7,408	-3,500	259,082	41,923	11427,523	9047,115	0,784	144,888	135,404	3,953	18,179	615,882	22,131	619,778	92,733	1512,589
7,500	65414	7,605	-3,500	258,957	41,926	11535,593	9056,871	0,785	144,617	135,229	4,054	17,720	599,256	21,772	603,254	92,833	1514,377
7,700	67271	7,803	-3,500	258,618	41,930	11643,726	9066,364	0,788	144,356	135,042	4,155	17,284	583,558	21,437	587,658	92,930	1516,253
7,900	69130	8,000	-3,500	258,319	41,933	11752,472	9075,239	0,790	144,104	134,847	4,255	16,870	568,591	21,124	572,793	93,021	1517,877
8,100	70991	8,197	-3,500	258,041	41,936	11861,680	9083,585	0,791	143,859	134,652	4,356	16,475	554,341	20,830	558,645	93,107	1519,371
8,300	72854	8,395	-3,500	257,772	41,939	11971,649	9090,585	0,793	143,621	134,447	4,457	16,099	540,543	20,555	544,950	93,178	1520,134
8,500	74718	8,592	-3,500	257,504	41,942	12082,267	9096,853	0,795	143,389	134,236	4,558	15,741	527,315	20,297	531,823	93,243	1520,593
8,700	76584	8,789	-3,500	257,229	41,945	12192,103	9104,708	0,797	143,164	134,046	4,658	15,400	515,045	20,057	519,654	93,323	1522,038
8,900	78452	8,987	-3,500	256,936	41,947	12300,842	9114,432	0,799	142,944	133,881	4,759	15,075	503,708	19,832	508,419	93,423	1524,611
9,100	80321	9,185	-3,500	256,615	41,949	12409,798	9123,939	0,801	142,731	133,720	4,860	14,763	492,873	19,621	497,686	93,520	1527,155
9,300	82193	9,383	-3,500	256,251	41,951	12518,421	9133,817	0,803	142,524	133,563	4,960	14,465	482,601	19,424	487,516	93,622	1529,978
9,500	84066	9,580	-3,500	255,792	41,953	12626,134	9144,035	0,805	142,322	133,408	5,061	14,180	472,865	19,240	477,882	93,726	1533,109

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
9,700	85942	9,778	-3,500	255,097	41,955	12733,672	9154,043	0,808	142,125	133,253	5,162	13,907	463,519	19,067	468,637	93,829	1536,177
9,900	87820	9,977	-3,500	253,608	41,956	12839,260	9166,525	0,814	141,934	133,128	5,263	13,644	454,999	18,906	460,218	93,957	1540,768
10,100	89700	10,175	-3,500	253,635	41,958	12943,997	9179,735	0,815	141,748	133,018	5,363	13,392	446,957	18,755	452,278	94,092	1545,850
10,300	91584	10,373	-3,500	253,674	41,959	13048,838	9193,189	0,816	141,567	132,907	5,464	13,150	439,280	18,614	444,703	94,230	1551,117
10,500	93470	10,572	-3,500	253,717	41,961	13153,770	9206,746	0,816	141,390	132,796	5,565	12,918	431,927	18,482	437,452	94,369	1556,499
10,700	95359	10,770	-3,500	253,763	41,962	13258,896	9220,680	0,817	141,218	132,681	5,667	12,694	424,925	18,359	430,552	94,512	1562,166
10,900	97251	10,969	-3,500	253,811	41,963	13364,226	9234,931	0,818	141,051	132,565	5,768	12,479	418,239	18,245	423,967	94,658	1568,065
11,100	99145	11,167	-3,500	253,861	41,964	13469,783	9249,526	0,818	140,887	132,445	5,869	12,271	411,859	18,139	417,689	94,808	1574,222
11,300	101043	11,366	-3,500	253,912	41,965	13575,459	9264,283	0,819	140,727	132,324	5,970	12,072	405,733	18,041	411,666	94,959	1580,504
11,500	102944	11,564	-3,500	253,968	41,966	13681,683	9279,447	0,820	140,570	132,197	6,072	11,879	399,893	17,950	405,927	95,114	1587,087
11,700	104848	11,762	-3,500	254,027	41,967	13788,587	9294,750	0,820	140,416	132,069	6,173	11,694	394,277	17,866	400,413	95,271	1593,786
11,900	106755	11,960	-3,500	254,092	41,968	13895,396	9310,530	0,821	140,266	131,938	6,275	11,515	388,919	17,789	395,157	95,433	1600,788
12,100	108666	12,158	-3,500	254,163	41,969	14002,388	9326,692	0,822	140,117	131,804	6,377	11,342	383,796	17,718	390,137	95,599	1608,058
12,300	110580	12,357	-3,500	254,241	41,969	14109,465	9343,147	0,822	139,972	131,669	6,478	11,176	378,880	17,653	385,322	95,767	1615,518
12,500	112497	12,555	-3,500	254,330	41,970	14216,865	9360,104	0,823	139,829	131,529	6,580	11,015	374,190	17,594	380,735	95,941	1623,304
12,700	114418	12,753	-3,500	254,425	41,971	14324,394	9377,320	0,823	139,688	131,388	6,682	10,860	369,679	17,541	376,326	96,118	1631,257
12,900	116343	12,951	-3,500	254,540	41,972	14432,315	9394,955	0,824	139,549	131,245	6,784	10,710	365,362	17,493	372,112	96,298	1639,478
13,100	118271	13,149	-3,500	254,687	41,972	14540,589	9412,986	0,824	139,411	131,100	6,886	10,565	361,222	17,451	368,075	96,483	1647,939
13,300	120203	13,347	-3,500	254,881	41,973	14649,295	9431,419	0,824	139,276	130,951	6,989	10,426	357,256	17,413	364,211	96,672	1656,658
13,500	122138	13,545	-3,500	255,174	41,973	14727,703	9450,402	0,824	139,143	130,798	7,091	10,291	353,474	17,381	360,532	96,867	1665,726
13,700	124077	13,742	-3,500	255,668	41,974	14836,150	9470,365	0,823	139,011	130,635	7,194	10,161	349,925	17,353	357,086	97,071	1675,418
13,900	126021	13,940	-3,500	256,963	41,975	14945,635	9491,363	0,820	138,880	130,461	7,296	10,035	346,609	17,330	353,873	97,286	1685,794
14,100	127969	14,137	-3,500	259,362	41,975	15057,482	9514,513	0,813	138,751	130,261	7,399	9,913	343,670	17,311	351,036	97,524	1697,632



Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

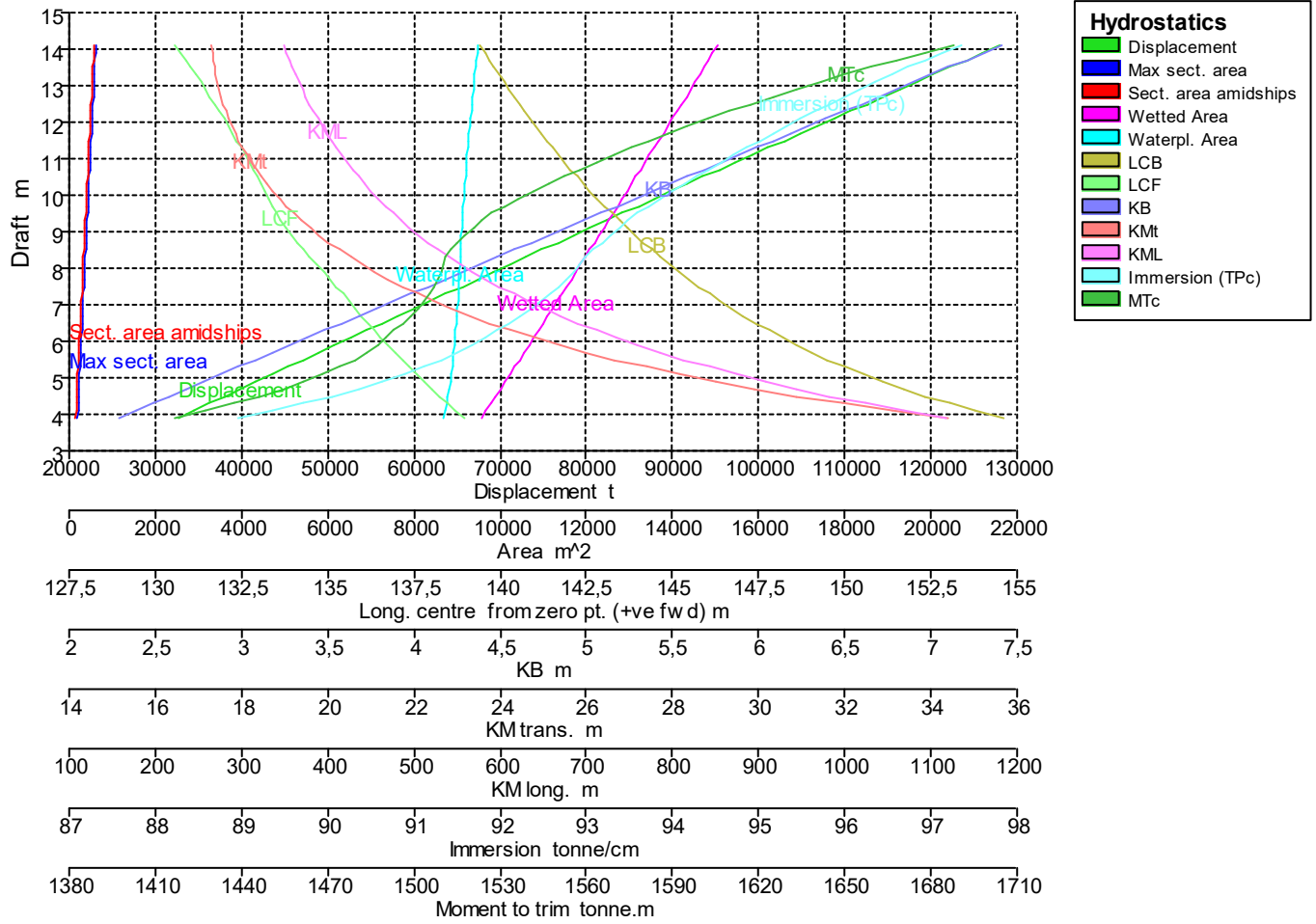
Fixed Trim = -4 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
3,900	32694	4,079	-4,000	258,622	41,698	9560,391	8679,375	0,767	154,594	138,981	2,289	32,097	1115,884	34,382	1118,036	88,964	1416,491
4,100	34477	4,275	-4,000	258,727	41,736	9675,235	8718,702	0,768	153,779	138,716	2,386	30,734	1066,768	33,116	1069,024	89,367	1427,522
4,300	36268	4,471	-4,000	258,831	41,766	9788,109	8753,570	0,769	153,029	138,475	2,485	29,469	1021,370	31,949	1023,729	89,724	1437,286
4,500	38066	4,668	-4,000	258,933	41,791	9900,272	8786,102	0,769	152,336	138,240	2,583	28,304	979,595	30,883	982,057	90,058	1446,359
4,700	39870	4,864	-4,000	259,024	41,814	10011,729	8815,867	0,770	151,692	138,010	2,682	27,225	940,879	29,903	943,445	90,363	1454,573
4,900	41680	5,061	-4,000	259,104	41,831	10121,967	8842,336	0,771	151,093	137,798	2,781	26,217	904,745	28,995	907,415	90,634	1461,748
5,100	43495	5,257	-4,000	259,175	41,849	10232,048	8866,909	0,772	150,533	137,586	2,880	25,282	871,143	28,159	873,916	90,886	1468,300
5,300	45315	5,454	-4,000	259,238	41,861	10341,827	8889,389	0,773	150,008	137,375	2,980	24,408	839,790	27,384	842,666	91,116	1474,238
5,500	47140	5,651	-4,000	259,290	41,872	10451,406	8909,495	0,774	149,514	137,168	3,079	23,590	810,293	26,666	813,272	91,322	1479,284
5,700	48968	5,848	-4,000	259,332	41,883	10560,866	8927,513	0,775	149,049	136,963	3,179	22,822	782,549	25,998	785,631	91,507	1483,608
5,900	50800	6,044	-4,000	259,365	41,890	10670,768	8943,768	0,777	148,609	136,751	3,279	22,103	756,403	25,379	759,588	91,674	1487,256
6,100	52635	6,241	-4,000	259,389	41,897	10781,183	8958,312	0,778	148,191	136,537	3,378	21,426	731,748	24,802	735,037	91,823	1490,328
6,300	54472	6,438	-4,000	259,398	41,904	10890,671	8971,335	0,779	147,793	136,332	3,478	20,789	708,413	24,265	711,804	91,956	1492,760
6,500	56313	6,635	-4,000	259,327	41,909	10998,476	8985,581	0,780	147,415	136,158	3,578	20,191	686,952	23,767	690,446	92,102	1496,059
6,700	58157	6,832	-4,000	259,248	41,913	11106,409	8999,061	0,782	147,055	135,980	3,678	19,627	666,713	23,303	670,310	92,240	1499,136
6,900	60003	7,029	-4,000	259,160	41,918	11214,509	9011,227	0,783	146,711	135,803	3,778	19,092	647,476	22,868	651,174	92,365	1501,724
7,100	61851	7,227	-4,000	259,060	41,921	11322,730	9022,429	0,785	146,383	135,627	3,878	18,587	629,191	22,463	632,992	92,480	1503,909
7,300	63702	7,424	-4,000	258,950	41,925	11431,367	9032,454	0,786	146,068	135,447	3,979	18,107	611,761	22,084	615,664	92,583	1505,642
7,500	65554	7,621	-4,000	258,828	41,928	11540,348	9041,742	0,787	145,765	135,264	4,079	17,653	595,171	21,729	599,177	92,678	1507,064
7,700	67408	7,818	-4,000	258,693	41,931	11649,614	9049,992	0,789	145,474	135,078	4,179	17,221	579,314	21,398	583,422	92,762	1508,062
7,900	69264	8,015	-4,000	258,352	41,934	11758,362	9058,428	0,791	145,194	134,880	4,279	16,810	564,422	21,087	568,632	92,849	1509,426
8,100	71121	8,212	-4,000	258,005	41,937	11867,543	9065,739	0,793	144,922	134,669	4,379	16,419	550,097	20,797	554,408	92,924	1510,251
8,300	72980	8,408	-4,000	257,675	41,940	11977,465	9072,354	0,795	144,659	134,452	4,479	16,047	536,384	20,525	540,797	92,992	1510,790
8,500	74840	8,605	-4,000	257,349	41,943	12086,652	9081,223	0,797	144,403	134,274	4,579	15,693	523,788	20,270	528,303	93,083	1512,663
8,700	76703	8,803	-4,000	257,012	41,945	12195,281	9090,936	0,799	144,155	134,111	4,679	15,355	511,982	20,032	516,599	93,182	1515,129
8,900	78568	9,000	-4,000	256,652	41,947	12304,202	9100,708	0,801	143,914	133,949	4,780	15,032	500,755	19,809	505,473	93,282	1517,705
9,100	80435	9,198	-4,000	256,236	41,949	12412,335	9111,005	0,803	143,681	133,793	4,880	14,722	490,167	19,600	494,987	93,388	1520,706
9,300	82303	9,395	-4,000	255,718	41,951	12519,845	9120,901	0,806	143,454	133,639	4,980	14,426	479,994	19,405	484,915	93,489	1523,550
9,500	84174	9,593	-4,000	254,844	41,953	12627,013	9131,193	0,809	143,234	133,490	5,080	14,143	470,345	19,222	475,368	93,595	1526,688

Cuaderno 4: Arquitectura naval
Marina de la Peña Herrero

Draft Amidships m	Displacement t	Draft at LCF m	Trim (+ve by stern) m	WL Length m	Beam max extents on WL m	Wetted Area m ²	Waterpl. Area m ²	Block coeff. (Cb)	LCB from zero pt. (+ve fwd) m	LCF from zero pt. (+ve fwd) m	KB m	BMt m	BML m	KMt m	KML m	Immersion (TPc) tonne/cm	MTc tonne.m
9,700	86047	9,791	-4,000	253,653	41,955	12731,852	9144,163	0,814	143,020	133,375	5,181	13,871	461,601	19,050	466,725	93,728	1531,517
9,900	87923	9,990	-4,000	253,665	41,957	12836,500	9157,468	0,815	142,813	133,264	5,281	13,610	453,280	18,889	458,505	93,864	1536,584
10,100	89802	10,188	-4,000	253,683	41,958	12941,238	9170,889	0,816	142,611	133,154	5,382	13,359	445,328	18,739	450,655	94,002	1541,788
10,300	91684	10,386	-4,000	253,707	41,960	13045,979	9184,268	0,816	142,416	133,046	5,482	13,118	437,689	18,599	443,117	94,139	1547,008
10,500	93568	10,584	-4,000	253,742	41,961	13150,802	9197,813	0,817	142,226	132,938	5,583	12,887	430,377	18,468	435,908	94,278	1552,364
10,700	95455	10,783	-4,000	253,785	41,962	13255,776	9211,473	0,818	142,041	132,830	5,684	12,664	423,372	18,346	429,004	94,418	1557,847
10,900	97345	10,981	-4,000	253,828	41,963	13360,930	9225,468	0,818	141,860	132,719	5,785	12,450	416,685	18,233	422,419	94,561	1563,569
11,100	99237	11,179	-4,000	253,875	41,964	13466,258	9239,772	0,819	141,684	132,605	5,886	12,243	410,298	18,128	416,134	94,708	1569,529
11,300	101133	11,377	-4,000	253,922	41,965	13572,180	9254,278	0,820	141,513	132,486	5,987	12,044	404,177	18,030	410,114	94,856	1575,655
11,500	103032	11,576	-4,000	253,974	41,967	13678,645	9268,951	0,820	141,345	132,366	6,088	11,853	398,299	17,939	404,338	95,007	1581,917
11,700	104934	11,774	-4,000	254,027	41,967	13784,871	9284,198	0,821	141,180	132,243	6,189	11,668	392,714	17,856	398,855	95,163	1588,569
11,900	106839	11,972	-4,000	254,084	41,968	13891,285	9299,676	0,822	141,019	132,118	6,291	11,489	387,352	17,779	393,595	95,322	1595,389
12,100	108747	12,170	-4,000	254,148	41,969	13997,809	9315,530	0,822	140,862	131,991	6,392	11,317	382,222	17,708	388,567	95,484	1602,455
12,300	110659	12,368	-4,000	254,215	41,969	14104,588	9331,831	0,823	140,707	131,860	6,493	11,151	377,323	17,643	383,770	95,651	1609,824
12,500	112573	12,566	-4,000	254,280	41,970	14211,521	9348,416	0,823	140,555	131,727	6,595	10,991	372,618	17,585	379,167	95,821	1617,378
12,700	114492	12,763	-4,000	254,357	41,971	14318,828	9365,450	0,824	140,405	131,591	6,697	10,836	368,121	17,532	374,773	95,996	1625,223
12,900	116414	12,961	-4,000	254,447	41,972	14426,435	9382,845	0,825	140,258	131,454	6,798	10,687	363,808	17,484	370,562	96,174	1633,297
13,100	118339	13,159	-4,000	254,555	41,972	14534,357	9400,602	0,825	140,113	131,314	6,900	10,543	359,671	17,442	366,527	96,356	1641,603
13,300	120269	13,357	-4,000	254,691	41,973	14642,625	9418,771	0,825	139,970	131,171	7,002	10,403	355,706	17,404	362,664	96,542	1650,164
13,500	122202	13,555	-4,000	254,873	41,974	14751,266	9437,322	0,826	139,829	131,027	7,104	10,268	351,901	17,372	358,962	96,733	1658,962
13,700	124138	13,752	-4,000	255,135	41,974	14829,940	9456,330	0,826	139,690	130,878	7,207	10,138	348,261	17,344	355,425	96,927	1668,049
13,900	126079	13,950	-4,000	255,561	41,975	14938,306	9476,366	0,825	139,553	130,720	7,309	10,012	344,853	17,320	352,119	97,133	1677,793
14,100	128023	14,147	-4,000	256,446	41,975	15047,544	9497,300	0,823	139,418	130,552	7,412	9,891	341,652	17,301	349,021	97,347	1688,130



9 CURVAS KN

En este apartado se lleva a cabo el cálculo de las curvas KN, se debe mantener los valores de referencia establecidos en el apartado anterior en cuanto a calados y asientos.

Además, se debe comprobar la simetría del buque e indicarlo, para ello se comprueba si el valor de TCB en el apartado "Equilibrium" de Maxsurf Stability es igual a cero. En nuestro caso, se cumple.

Por último, se debe indicar la altura del centro de gravedad (KG), en este momento del proyecto, al no haber calculado aun las distintas condiciones de carga, el único valor KG calculado es el del peso en rosca, por tanto, se tomará un valor ligeramente inferior como aproximación para el cálculo de las curvas KN.

A continuación, se muestran los informes obtenidos por el programa como resultado de las curvas KN para cada caso.

Initial Trim = 0 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

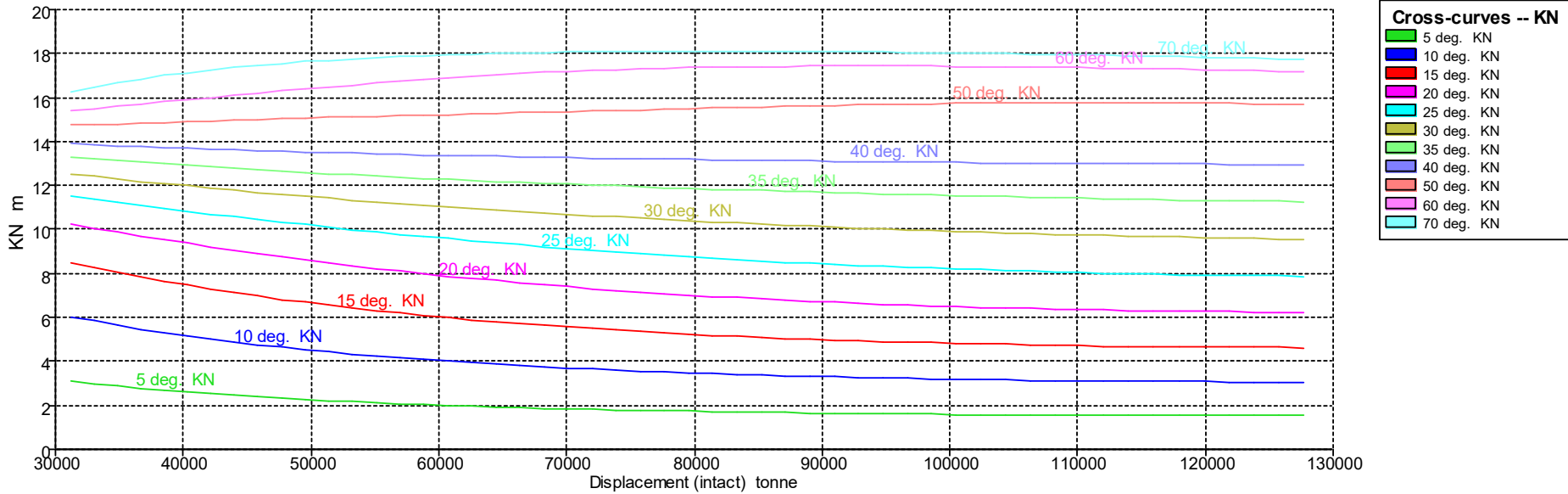
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
31257	3,900	0,000	0,000	3,118	6,039	8,485	10,252	11,548	12,534	13,298	13,892	14,735	15,373	16,283
33057	4,100	0,000	0,000	2,998	5,833	8,264	10,064	11,394	12,416	13,215	13,846	14,771	15,484	16,485
34865	4,300	0,000	0,000	2,889	5,642	8,050	9,882	11,246	12,301	13,135	13,802	14,804	15,592	16,675
36679	4,500	0,000	0,000	2,789	5,465	7,846	9,706	11,103	12,190	13,058	13,761	14,838	15,699	16,847
38500	4,700	0,000	0,000	2,697	5,301	7,651	9,535	10,964	12,083	12,983	13,721	14,873	15,803	17,000
40326	4,900	0,000	0,000	2,612	5,148	7,466	9,370	10,829	11,980	12,911	13,682	14,906	15,906	17,136
42158	5,100	0,000	0,000	2,533	5,005	7,290	9,210	10,699	11,879	12,842	13,646	14,938	16,007	17,261
43995	5,300	0,000	0,000	2,461	4,872	7,124	9,055	10,572	11,782	12,775	13,612	14,969	16,103	17,372
45836	5,500	0,000	0,000	2,394	4,748	6,968	8,904	10,449	11,688	12,711	13,580	15,000	16,198	17,471
47682	5,700	0,000	0,000	2,331	4,632	6,819	8,758	10,329	11,596	12,649	13,550	15,030	16,291	17,558
49531	5,900	0,000	0,000	2,274	4,523	6,679	8,617	10,213	11,508	12,589	13,521	15,060	16,383	17,634
51385	6,100	0,000	0,000	2,220	4,422	6,546	8,481	10,100	11,422	12,532	13,493	15,089	16,474	17,702
53243	6,300	0,000	0,000	2,170	4,327	6,421	8,349	9,990	11,338	12,476	13,466	15,117	16,564	17,764
55104	6,500	0,000	0,000	2,123	4,237	6,302	8,223	9,883	11,257	12,423	13,440	15,145	16,652	17,815
56969	6,700	0,000	0,000	2,079	4,154	6,190	8,102	9,778	11,179	12,372	13,416	15,173	16,737	17,866
58837	6,900	0,000	0,000	2,039	4,076	6,083	7,986	9,677	11,103	12,323	13,392	15,200	16,819	17,910
60708	7,100	0,000	0,000	2,001	4,002	5,983	7,875	9,579	11,029	12,276	13,369	15,227	16,895	17,948
62582	7,300	0,000	0,000	1,965	3,933	5,888	7,769	9,483	10,957	12,230	13,348	15,254	16,966	17,981
64458	7,500	0,000	0,000	1,932	3,869	5,798	7,668	9,390	10,887	12,185	13,327	15,281	17,031	18,009
66337	7,700	0,000	0,000	1,901	3,808	5,714	7,572	9,301	10,820	12,142	13,306	15,308	17,090	18,032
68218	7,900	0,000	0,000	1,872	3,751	5,634	7,480	9,214	10,754	12,100	13,287	15,334	17,142	18,052
70101	8,100	0,000	0,000	1,844	3,698	5,558	7,392	9,130	10,690	12,060	13,268	15,360	17,189	18,068
71985	8,300	0,000	0,000	1,819	3,648	5,487	7,309	9,049	10,629	12,020	13,250	15,386	17,232	18,082
73872	8,500	0,000	0,000	1,795	3,601	5,420	7,230	8,971	10,569	11,982	13,232	15,412	17,269	18,093
75761	8,700	0,000	0,000	1,773	3,557	5,357	7,155	8,897	10,511	11,944	13,216	15,438	17,301	18,101
77653	8,900	0,000	0,000	1,752	3,516	5,298	7,083	8,826	10,454	11,907	13,200	15,464	17,330	18,104
79546	9,100	0,000	0,000	1,732	3,477	5,242	7,016	8,757	10,399	11,872	13,185	15,490	17,354	18,108
81441	9,300	0,000	0,000	1,714	3,441	5,189	6,952	8,692	10,346	11,837	13,170	15,516	17,374	18,110
83339	9,500	0,000	0,000	1,697	3,407	5,139	6,891	8,630	10,294	11,803	13,156	15,542	17,391	18,109
85238	9,700	0,000	0,000	1,681	3,375	5,093	6,834	8,571	10,244	11,771	13,142	15,568	17,404	18,106
87139	9,900	0,000	0,000	1,666	3,346	5,050	6,781	8,515	10,196	11,738	13,129	15,594	17,414	18,101
89041	10,100	0,000	0,000	1,652	3,318	5,009	6,730	8,462	10,149	11,708	13,116	15,619	17,422	18,095
90946	10,300	0,000	0,000	1,639	3,292	4,971	6,682	8,412	10,103	11,678	13,104	15,643	17,427	18,087

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
92852	10,500	0,000	0,000	1,628	3,268	4,936	6,638	8,364	10,061	11,648	13,092	15,665	17,430	18,078
94761	10,700	0,000	0,000	1,616	3,246	4,903	6,596	8,319	10,019	11,620	13,080	15,685	17,430	18,067
96672	10,900	0,000	0,000	1,606	3,225	4,872	6,557	8,276	9,979	11,592	13,069	15,704	17,428	18,055
98586	11,100	0,000	0,000	1,596	3,206	4,843	6,521	8,236	9,940	11,564	13,059	15,719	17,423	18,042
100502	11,300	0,000	0,000	1,588	3,189	4,817	6,487	8,199	9,905	11,538	13,049	15,733	17,417	18,027
102422	11,500	0,000	0,000	1,579	3,172	4,793	6,456	8,163	9,870	11,512	13,039	15,744	17,409	18,012
104344	11,700	0,000	0,000	1,572	3,157	4,770	6,428	8,130	9,837	11,488	13,029	15,752	17,399	17,995
106270	11,900	0,000	0,000	1,565	3,143	4,750	6,401	8,098	9,805	11,464	13,020	15,758	17,388	17,978
108200	12,100	0,000	0,000	1,559	3,131	4,731	6,377	8,070	9,774	11,441	13,012	15,761	17,375	17,960
110133	12,300	0,000	0,000	1,553	3,119	4,714	6,355	8,043	9,746	11,418	13,004	15,762	17,360	17,941
112072	12,500	0,000	0,000	1,548	3,109	4,698	6,334	8,017	9,719	11,397	12,996	15,761	17,344	17,922
114015	12,700	0,000	0,000	1,543	3,100	4,684	6,316	7,993	9,694	11,377	12,989	15,758	17,327	17,900
115962	12,900	0,000	0,000	1,539	3,091	4,672	6,299	7,971	9,670	11,358	12,982	15,752	17,308	17,878
117914	13,100	0,000	0,000	1,535	3,084	4,661	6,284	7,950	9,648	11,340	12,976	15,745	17,288	17,856
119872	13,300	0,000	0,000	1,532	3,078	4,652	6,270	7,931	9,627	11,323	12,970	15,736	17,268	17,833
121834	13,500	0,000	0,000	1,530	3,072	4,644	6,257	7,914	9,607	11,307	12,965	15,725	17,246	17,810
123801	13,700	0,000	0,000	1,527	3,068	4,637	6,246	7,898	9,589	11,292	12,960	15,712	17,223	17,786
125773	13,900	0,000	0,000	1,526	3,064	4,631	6,236	7,883	9,573	11,278	12,956	15,698	17,200	17,762
127751	14,100	0,000	0,000	1,524	3,061	4,627	6,228	7,871	9,557	11,265	12,952	15,682	17,175	17,737



Initial Trim = -0,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

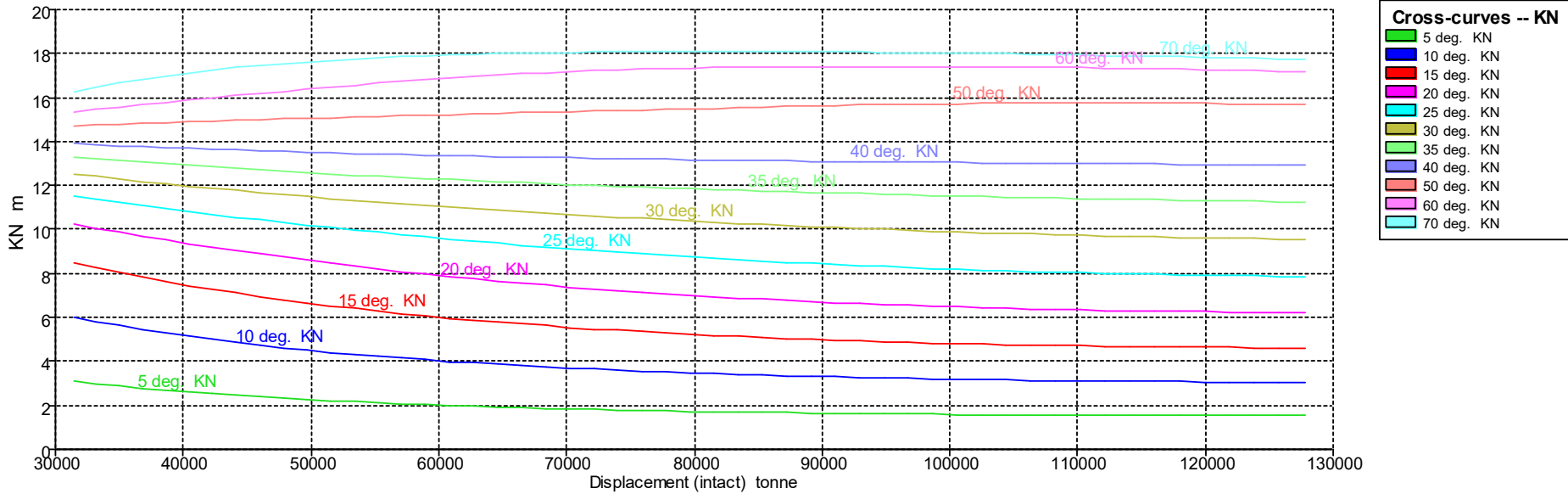
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
31419	3,900	-0,500	0,000	3,103	6,016	8,465	10,240	11,541	12,532	13,298	13,891	14,726	15,360	16,280
33218	4,100	-0,500	0,000	2,985	5,811	8,243	10,051	11,387	12,412	13,214	13,845	14,760	15,473	16,481
35025	4,300	-0,500	0,000	2,876	5,621	8,030	9,868	11,238	12,297	13,133	13,800	14,795	15,582	16,666
36838	4,500	-0,500	0,000	2,777	5,445	7,825	9,691	11,094	12,185	13,055	13,757	14,829	15,689	16,834
38658	4,700	-0,500	0,000	2,685	5,282	7,630	9,520	10,954	12,078	12,980	13,716	14,861	15,794	16,985
40484	4,900	-0,500	0,000	2,601	5,129	7,445	9,354	10,819	11,973	12,907	13,677	14,894	15,897	17,124
42314	5,100	-0,500	0,000	2,523	4,988	7,270	9,194	10,688	11,872	12,837	13,640	14,927	15,998	17,248
44150	5,300	-0,500	0,000	2,452	4,856	7,105	9,038	10,560	11,774	12,769	13,605	14,959	16,097	17,358
45990	5,500	-0,500	0,000	2,385	4,732	6,949	8,888	10,437	11,679	12,704	13,572	14,990	16,194	17,456
47835	5,700	-0,500	0,000	2,323	4,617	6,801	8,741	10,317	11,587	12,641	13,541	15,021	16,288	17,542
49683	5,900	-0,500	0,000	2,266	4,509	6,661	8,600	10,200	11,498	12,581	13,511	15,051	16,380	17,618
51535	6,100	-0,500	0,000	2,213	4,408	6,529	8,464	10,086	11,411	12,523	13,483	15,080	16,471	17,687
53391	6,300	-0,500	0,000	2,163	4,313	6,404	8,332	9,976	11,328	12,467	13,456	15,109	16,561	17,745
55250	6,500	-0,500	0,000	2,117	4,225	6,286	8,206	9,869	11,246	12,413	13,430	15,138	16,649	17,802
57112	6,700	-0,500	0,000	2,073	4,142	6,174	8,085	9,764	11,167	12,361	13,405	15,166	16,734	17,852
58978	6,900	-0,500	0,000	2,033	4,064	6,068	7,970	9,663	11,090	12,311	13,381	15,194	16,814	17,895
60847	7,100	-0,500	0,000	1,995	3,991	5,968	7,859	9,564	11,016	12,263	13,358	15,221	16,889	17,933
62718	7,300	-0,500	0,000	1,960	3,923	5,874	7,754	9,469	10,944	12,217	13,337	15,248	16,958	17,966
64592	7,500	-0,500	0,000	1,927	3,859	5,785	7,653	9,376	10,874	12,172	13,316	15,275	17,022	17,994
66467	7,700	-0,500	0,000	1,896	3,799	5,700	7,557	9,286	10,806	12,129	13,295	15,302	17,079	18,018
68345	7,900	-0,500	0,000	1,867	3,742	5,621	7,465	9,199	10,740	12,087	13,276	15,329	17,131	18,037
70225	8,100	-0,500	0,000	1,840	3,689	5,546	7,378	9,115	10,676	12,046	13,257	15,355	17,179	18,054
72106	8,300	-0,500	0,000	1,815	3,640	5,475	7,295	9,034	10,614	12,006	13,239	15,381	17,221	18,068
73991	8,500	-0,500	0,000	1,791	3,593	5,409	7,216	8,956	10,554	11,968	13,222	15,408	17,258	18,080
75877	8,700	-0,500	0,000	1,769	3,550	5,346	7,141	8,882	10,495	11,930	13,205	15,434	17,291	18,085
77765	8,900	-0,500	0,000	1,748	3,509	5,287	7,070	8,810	10,439	11,894	13,189	15,460	17,319	18,092
79655	9,100	-0,500	0,000	1,729	3,470	5,231	7,003	8,742	10,384	11,858	13,174	15,486	17,343	18,096
81547	9,300	-0,500	0,000	1,711	3,434	5,179	6,939	8,677	10,330	11,824	13,160	15,512	17,363	18,098
83440	9,500	-0,500	0,000	1,694	3,401	5,130	6,879	8,615	10,279	11,790	13,146	15,538	17,380	18,097
85336	9,700	-0,500	0,000	1,678	3,369	5,084	6,822	8,556	10,229	11,757	13,132	15,564	17,393	18,095
87232	9,900	-0,500	0,000	1,663	3,340	5,041	6,768	8,500	10,180	11,725	13,119	15,590	17,404	18,090
89131	10,100	-0,500	0,000	1,650	3,312	5,000	6,718	8,447	10,134	11,694	13,106	15,614	17,411	18,084
91031	10,300	-0,500	0,000	1,637	3,287	4,963	6,671	8,397	10,089	11,665	13,094	15,637	17,417	18,076
92934	10,500	-0,500	0,000	1,625	3,263	4,927	6,626	8,349	10,045	11,636	13,082	15,658	17,420	18,067
94839	10,700	-0,500	0,000	1,614	3,241	4,895	6,585	8,305	10,004	11,607	13,071	15,678	17,420	18,056

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
96747	10,900	-0,500	0,000	1,604	3,221	4,864	6,546	8,262	9,964	11,579	13,060	15,695	17,417	18,045
98657	11,100	-0,500	0,000	1,594	3,202	4,836	6,510	8,222	9,926	11,552	13,049	15,710	17,414	18,032
100570	11,300	-0,500	0,000	1,585	3,184	4,810	6,476	8,185	9,890	11,526	13,039	15,723	17,408	18,018
102486	11,500	-0,500	0,000	1,577	3,168	4,785	6,445	8,149	9,856	11,500	13,030	15,733	17,400	18,003
104406	11,700	-0,500	0,000	1,570	3,153	4,763	6,417	8,117	9,823	11,476	13,020	15,742	17,390	17,987
106329	11,900	-0,500	0,000	1,563	3,139	4,742	6,390	8,086	9,792	11,452	13,011	15,747	17,379	17,970
108255	12,100	-0,500	0,000	1,557	3,126	4,724	6,366	8,056	9,762	11,429	13,003	15,751	17,366	17,952
110185	12,300	-0,500	0,000	1,551	3,115	4,707	6,344	8,031	9,734	11,407	12,995	15,751	17,351	17,933
112120	12,500	-0,500	0,000	1,546	3,104	4,691	6,323	8,005	9,707	11,386	12,988	15,750	17,335	17,912
114058	12,700	-0,500	0,000	1,541	3,095	4,677	6,305	7,981	9,682	11,366	12,980	15,747	17,318	17,892
116002	12,900	-0,500	0,000	1,537	3,087	4,665	6,288	7,959	9,659	11,347	12,974	15,741	17,299	17,871
117950	13,100	-0,500	0,000	1,533	3,079	4,654	6,273	7,939	9,636	11,329	12,968	15,734	17,280	17,849
119903	13,300	-0,500	0,000	1,530	3,073	4,644	6,260	7,920	9,616	11,313	12,962	15,725	17,259	17,827
121860	13,500	-0,500	0,000	1,527	3,068	4,636	6,247	7,903	9,597	11,297	12,957	15,714	17,238	17,804
123823	13,700	-0,500	0,000	1,525	3,063	4,629	6,237	7,887	9,579	11,282	12,952	15,702	17,215	17,780
125791	13,900	-0,500	0,000	1,523	3,059	4,623	6,227	7,873	9,562	11,269	12,948	15,688	17,192	17,756
127764	14,100	-0,500	0,000	1,522	3,056	4,619	6,219	7,861	9,547	11,256	12,944	15,672	17,167	17,731



Initial Trim = -1 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

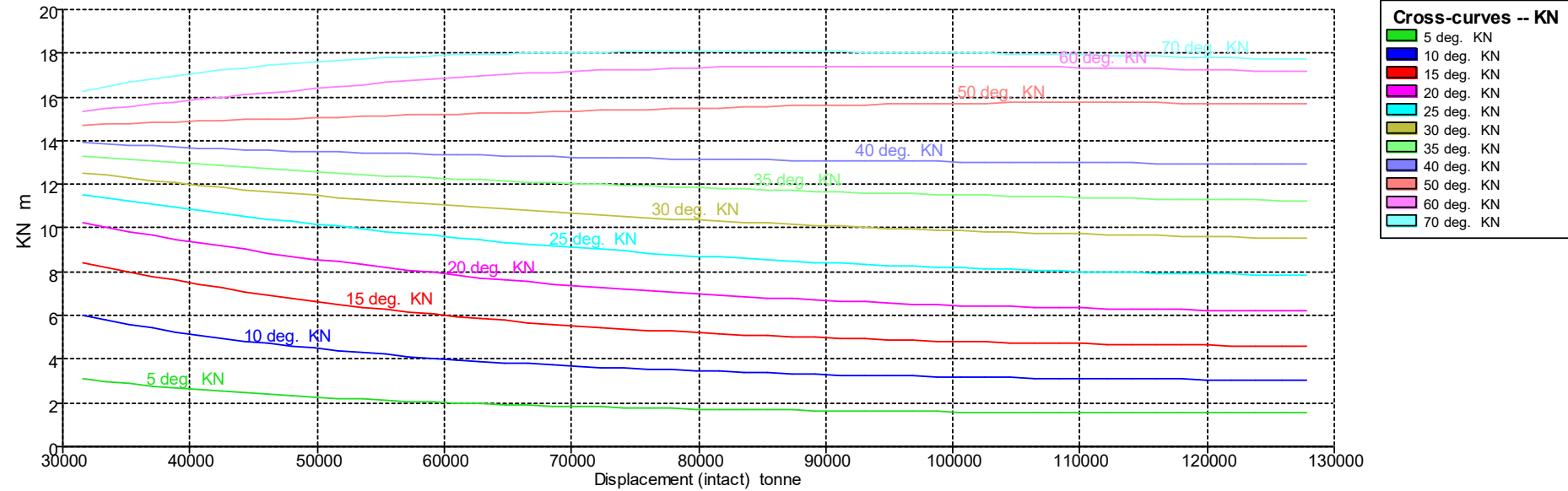
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
31586	3,900	-1,000	0,000	3,087	5,990	8,440	10,222	11,530	12,525	13,293	13,887	14,716	15,350	16,284
33384	4,100	-1,000	0,000	2,970	5,787	8,218	10,033	11,375	12,405	13,210	13,840	14,751	15,465	16,479
35190	4,300	-1,000	0,000	2,863	5,598	8,005	9,850	11,226	12,289	13,128	13,796	14,784	15,576	16,659
37002	4,500	-1,000	0,000	2,764	5,424	7,801	9,673	11,082	12,178	13,049	13,752	14,819	15,683	16,822
38820	4,700	-1,000	0,000	2,674	5,261	7,607	9,502	10,942	12,069	12,974	13,711	14,852	15,788	16,975
40644	4,900	-1,000	0,000	2,590	5,110	7,423	9,336	10,806	11,964	12,900	13,671	14,884	15,891	17,112
42474	5,100	-1,000	0,000	2,513	4,970	7,249	9,176	10,674	11,863	12,830	13,634	14,916	15,993	17,234
44308	5,300	-1,000	0,000	2,442	4,838	7,084	9,020	10,547	11,765	12,762	13,598	14,949	16,093	17,342
46147	5,500	-1,000	0,000	2,376	4,716	6,929	8,869	10,423	11,669	12,696	13,564	14,981	16,191	17,439
47990	5,700	-1,000	0,000	2,315	4,601	6,782	8,723	10,302	11,577	12,633	13,532	15,012	16,286	17,524
49837	5,900	-1,000	0,000	2,258	4,494	6,643	8,582	10,185	11,487	12,572	13,502	15,042	16,379	17,602
51687	6,100	-1,000	0,000	2,205	4,394	6,511	8,446	10,072	11,400	12,513	13,473	15,072	16,470	17,668
53541	6,300	-1,000	0,000	2,156	4,300	6,387	8,315	9,961	11,316	12,457	13,446	15,102	16,560	17,731
55398	6,500	-1,000	0,000	2,110	4,212	6,269	8,189	9,854	11,234	12,402	13,420	15,131	16,647	17,787
57258	6,700	-1,000	0,000	2,067	4,130	6,158	8,068	9,749	11,155	12,350	13,395	15,159	16,730	17,836
59121	6,900	-1,000	0,000	2,027	4,053	6,053	7,953	9,648	11,078	12,300	13,371	15,187	16,809	17,879
60987	7,100	-1,000	0,000	1,990	3,981	5,953	7,843	9,549	11,003	12,251	13,348	15,215	16,882	17,917
62855	7,300	-1,000	0,000	1,955	3,913	5,860	7,738	9,454	10,931	12,205	13,326	15,243	16,950	17,950
64726	7,500	-1,000	0,000	1,922	3,849	5,771	7,637	9,361	10,860	12,160	13,305	15,270	17,012	17,978
66598	7,700	-1,000	0,000	1,891	3,790	5,688	7,542	9,271	10,792	12,116	13,285	15,297	17,069	18,002
68473	7,900	-1,000	0,000	1,863	3,734	5,609	7,450	9,184	10,726	12,074	13,265	15,324	17,121	18,022
70350	8,100	-1,000	0,000	1,836	3,681	5,534	7,363	9,100	10,661	12,033	13,247	15,351	17,167	18,040
72229	8,300	-1,000	0,000	1,811	3,632	5,464	7,281	9,019	10,599	11,993	13,229	15,377	17,209	18,054
74110	8,500	-1,000	0,000	1,788	3,586	5,398	7,202	8,941	10,539	11,955	13,211	15,404	17,246	18,063
75993	8,700	-1,000	0,000	1,766	3,542	5,336	7,128	8,867	10,480	11,917	13,195	15,430	17,279	18,072
77878	8,900	-1,000	0,000	1,745	3,502	5,277	7,057	8,796	10,423	11,881	13,179	15,456	17,307	18,079
79765	9,100	-1,000	0,000	1,726	3,464	5,222	6,990	8,728	10,368	11,845	13,163	15,482	17,331	18,083
81653	9,300	-1,000	0,000	1,708	3,428	5,170	6,927	8,663	10,315	11,811	13,149	15,509	17,351	18,086
83543	9,500	-1,000	0,000	1,691	3,395	5,121	6,867	8,601	10,263	11,777	13,135	15,535	17,368	18,085
85434	9,700	-1,000	0,000	1,676	3,364	5,075	6,810	8,542	10,214	11,744	13,122	15,561	17,381	18,083
87327	9,900	-1,000	0,000	1,661	3,335	5,032	6,757	8,486	10,165	11,712	13,109	15,586	17,392	18,078
89222	10,100	-1,000	0,000	1,647	3,307	4,992	6,707	8,433	10,119	11,682	13,096	15,609	17,400	18,072
91119	10,300	-1,000	0,000	1,635	3,282	4,955	6,660	8,383	10,074	11,652	13,084	15,631	17,406	18,064
93018	10,500	-1,000	0,000	1,623	3,258	4,920	6,616	8,336	10,031	11,623	13,073	15,651	17,409	18,055
94920	10,700	-1,000	0,000	1,612	3,237	4,887	6,574	8,291	9,989	11,595	13,061	15,670	17,409	18,045

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
96824	10,900	-1,000	0,000	1,602	3,216	4,857	6,536	8,249	9,949	11,567	13,051	15,686	17,407	18,034
98730	11,100	-1,000	0,000	1,592	3,197	4,829	6,500	8,209	9,912	11,540	13,040	15,701	17,404	18,022
100640	11,300	-1,000	0,000	1,583	3,180	4,803	6,466	8,172	9,876	11,514	13,030	15,713	17,398	18,009
102554	11,500	-1,000	0,000	1,575	3,163	4,779	6,435	8,137	9,842	11,489	13,021	15,723	17,390	17,994
104470	11,700	-1,000	0,000	1,568	3,148	4,756	6,406	8,104	9,810	11,464	13,012	15,731	17,380	17,978
106391	11,900	-1,000	0,000	1,561	3,135	4,736	6,380	8,073	9,779	11,441	13,003	15,736	17,369	17,961
108315	12,100	-1,000	0,000	1,555	3,122	4,717	6,356	8,045	9,750	11,418	12,995	15,739	17,356	17,943
110242	12,300	-1,000	0,000	1,549	3,111	4,700	6,333	8,017	9,722	11,396	12,987	15,740	17,341	17,923
112173	12,500	-1,000	0,000	1,544	3,100	4,684	6,313	7,994	9,696	11,375	12,979	15,739	17,325	17,904
114107	12,700	-1,000	0,000	1,539	3,091	4,670	6,295	7,970	9,671	11,356	12,972	15,735	17,308	17,884
116047	12,900	-1,000	0,000	1,535	3,083	4,658	6,278	7,948	9,648	11,337	12,966	15,730	17,290	17,863
117991	13,100	-1,000	0,000	1,531	3,075	4,646	6,263	7,928	9,626	11,320	12,960	15,723	17,271	17,842
119939	13,300	-1,000	0,000	1,528	3,069	4,637	6,250	7,910	9,605	11,303	12,954	15,714	17,251	17,820
121893	13,500	-1,000	0,000	1,525	3,063	4,629	6,238	7,893	9,586	11,288	12,949	15,703	17,229	17,797
123851	13,700	-1,000	0,000	1,523	3,058	4,621	6,227	7,877	9,569	11,273	12,944	15,690	17,207	17,774
125814	13,900	-1,000	0,000	1,521	3,055	4,616	6,218	7,864	9,553	11,260	12,940	15,677	17,183	17,750
127783	14,100	-1,000	0,000	1,520	3,052	4,611	6,210	7,851	9,538	11,247	12,936	15,661	17,159	17,725



Initial Trim = -1,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

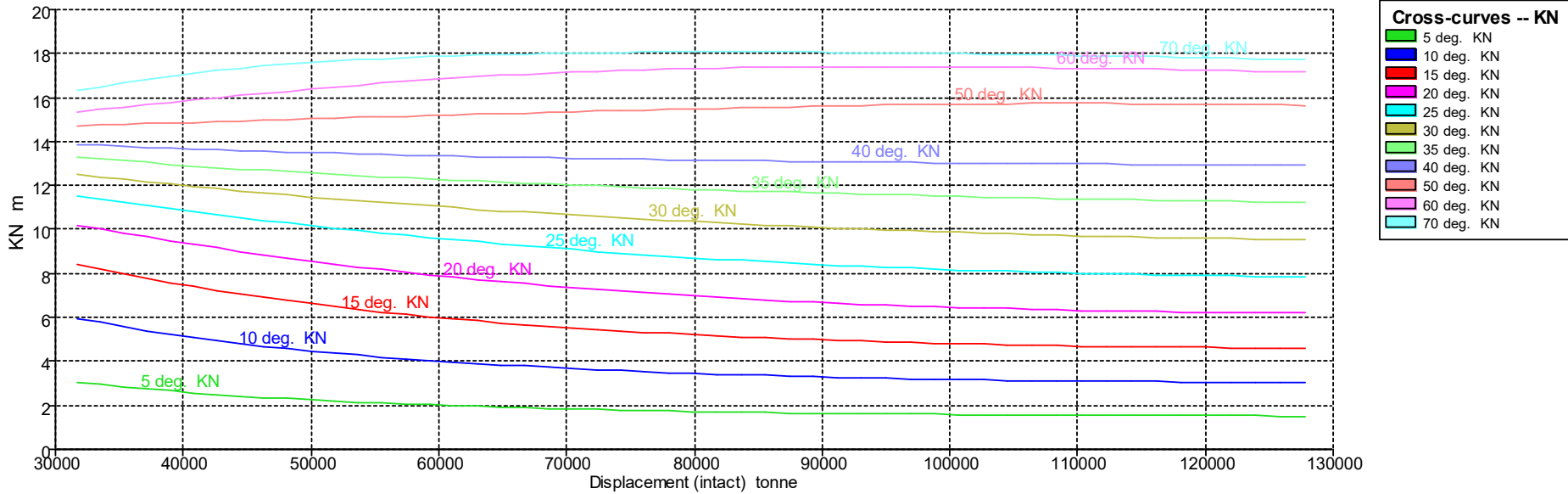
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
31758	3,900	-1,500	0,000	3,070	5,962	8,411	10,200	11,514	12,513	13,285	13,880	14,709	15,345	16,291
33555	4,100	-1,500	0,000	2,955	5,761	8,190	10,011	11,359	12,393	13,201	13,833	14,742	15,460	16,479
35359	4,300	-1,500	0,000	2,848	5,574	7,977	9,828	11,210	12,278	13,120	13,788	14,777	15,572	16,653
37170	4,500	-1,500	0,000	2,751	5,401	7,775	9,652	11,066	12,166	13,041	13,745	14,809	15,681	16,817
38986	4,700	-1,500	0,000	2,662	5,240	7,582	9,481	10,926	12,058	12,965	13,704	14,843	15,786	16,966
40809	4,900	-1,500	0,000	2,579	5,090	7,399	9,315	10,791	11,953	12,892	13,664	14,876	15,889	17,099
42636	5,100	-1,500	0,000	2,503	4,951	7,226	9,155	10,659	11,852	12,821	13,626	14,907	15,991	17,218
44469	5,300	-1,500	0,000	2,433	4,821	7,062	9,000	10,531	11,753	12,753	13,590	14,940	16,091	17,325
46306	5,500	-1,500	0,000	2,367	4,699	6,908	8,849	10,407	11,658	12,687	13,556	14,972	16,190	17,421
48147	5,700	-1,500	0,000	2,307	4,585	6,761	8,703	10,287	11,565	12,624	13,524	15,004	16,286	17,507
49993	5,900	-1,500	0,000	2,250	4,479	6,623	8,563	10,170	11,475	12,563	13,493	15,035	16,380	17,581
51841	6,100	-1,500	0,000	2,198	4,380	6,493	8,427	10,056	11,388	12,504	13,464	15,065	16,472	17,653
53693	6,300	-1,500	0,000	2,149	4,287	6,369	8,296	9,946	11,304	12,447	13,436	15,095	16,561	17,716
55548	6,500	-1,500	0,000	2,104	4,200	6,252	8,171	9,838	11,222	12,392	13,410	15,124	16,646	17,771
57405	6,700	-1,500	0,000	2,061	4,119	6,142	8,051	9,734	11,142	12,339	13,385	15,153	16,727	17,820
59265	6,900	-1,500	0,000	2,021	4,042	6,038	7,936	9,633	11,065	12,288	13,361	15,182	16,804	17,863
61128	7,100	-1,500	0,000	1,984	3,971	5,939	7,826	9,534	10,990	12,240	13,338	15,210	16,876	17,900
62994	7,300	-1,500	0,000	1,950	3,903	5,846	7,722	9,438	10,917	12,192	13,316	15,238	16,941	17,933
64861	7,500	-1,500	0,000	1,917	3,840	5,758	7,622	9,346	10,847	12,147	13,295	15,265	17,002	17,961
66730	7,700	-1,500	0,000	1,887	3,781	5,675	7,527	9,256	10,778	12,103	13,275	15,293	17,059	17,986
68602	7,900	-1,500	0,000	1,859	3,726	5,597	7,436	9,169	10,712	12,061	13,255	15,320	17,110	18,007
70476	8,100	-1,500	0,000	1,832	3,674	5,523	7,349	9,085	10,647	12,020	13,237	15,347	17,156	18,025
72353	8,300	-1,500	0,000	1,807	3,625	5,453	7,267	9,004	10,585	11,980	13,219	15,374	17,197	18,036
74231	8,500	-1,500	0,000	1,784	3,579	5,387	7,189	8,927	10,524	11,941	13,201	15,400	17,234	18,049
76111	8,700	-1,500	0,000	1,762	3,536	5,326	7,115	8,852	10,466	11,904	13,185	15,427	17,266	18,058
77992	8,900	-1,500	0,000	1,742	3,496	5,267	7,045	8,781	10,409	11,868	13,169	15,453	17,294	18,065
79875	9,100	-1,500	0,000	1,723	3,458	5,212	6,978	8,713	10,354	11,832	13,153	15,480	17,318	18,070
81760	9,300	-1,500	0,000	1,705	3,423	5,161	6,915	8,649	10,300	11,798	13,139	15,506	17,338	18,072
83646	9,500	-1,500	0,000	1,689	3,390	5,113	6,856	8,587	10,249	11,764	13,125	15,532	17,355	18,072
85533	9,700	-1,500	0,000	1,673	3,359	5,067	6,799	8,528	10,199	11,732	13,112	15,557	17,369	18,070
87423	9,900	-1,500	0,000	1,659	3,330	5,025	6,746	8,473	10,151	11,700	13,099	15,581	17,380	18,066
89314	10,100	-1,500	0,000	1,645	3,303	4,985	6,696	8,420	10,104	11,669	13,087	15,604	17,388	18,060
91208	10,300	-1,500	0,000	1,632	3,278	4,948	6,650	8,370	10,060	11,640	13,075	15,625	17,394	18,052

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
93104	10,500	-1,500	0,000	1,621	3,254	4,913	6,606	8,323	10,017	11,610	13,063	15,645	17,396	18,044
95002	10,700	-1,500	0,000	1,610	3,232	4,881	6,564	8,278	9,976	11,583	13,052	15,662	17,398	18,034
96903	10,900	-1,500	0,000	1,600	3,212	4,851	6,526	8,236	9,936	11,555	13,042	15,678	17,396	18,023
98807	11,100	-1,500	0,000	1,590	3,193	4,822	6,490	8,197	9,898	11,529	13,031	15,691	17,393	18,011
100714	11,300	-1,500	0,000	1,581	3,176	4,796	6,457	8,160	9,863	11,503	13,022	15,703	17,387	17,998
102625	11,500	-1,500	0,000	1,573	3,159	4,772	6,426	8,125	9,829	11,478	13,012	15,712	17,379	17,984
104539	11,700	-1,500	0,000	1,566	3,145	4,750	6,397	8,092	9,797	11,453	13,003	15,720	17,370	17,968
106456	11,900	-1,500	0,000	1,559	3,131	4,729	6,371	8,061	9,767	11,430	12,995	15,725	17,358	17,951
108377	12,100	-1,500	0,000	1,553	3,118	4,711	6,346	8,033	9,738	11,407	12,987	15,728	17,346	17,932
110302	12,300	-1,500	0,000	1,547	3,107	4,694	6,324	8,006	9,711	11,386	12,979	15,729	17,331	17,914
112230	12,500	-1,500	0,000	1,542	3,097	4,678	6,304	7,981	9,685	11,365	12,971	15,727	17,316	17,895
114162	12,700	-1,500	0,000	1,537	3,087	4,664	6,286	7,959	9,660	11,346	12,964	15,724	17,299	17,875
116097	12,900	-1,500	0,000	1,533	3,079	4,651	6,269	7,938	9,637	11,328	12,958	15,718	17,281	17,855
118037	13,100	-1,500	0,000	1,529	3,071	4,640	6,254	7,918	9,616	11,310	12,952	15,711	17,262	17,834
119981	13,300	-1,500	0,000	1,526	3,065	4,630	6,241	7,900	9,596	11,294	12,947	15,702	17,241	17,813
121931	13,500	-1,500	0,000	1,523	3,059	4,622	6,229	7,883	9,577	11,279	12,941	15,691	17,220	17,790
123885	13,700	-1,500	0,000	1,521	3,055	4,615	6,219	7,868	9,559	11,264	12,937	15,679	17,197	17,767
125844	13,900	-1,500	0,000	1,519	3,051	4,609	6,210	7,855	9,543	11,251	12,933	15,665	17,174	17,743
127808	14,100	-1,500	0,000	1,518	3,047	4,604	6,202	7,842	9,529	11,239	12,929	15,649	17,149	17,719



Initial Trim = -2 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

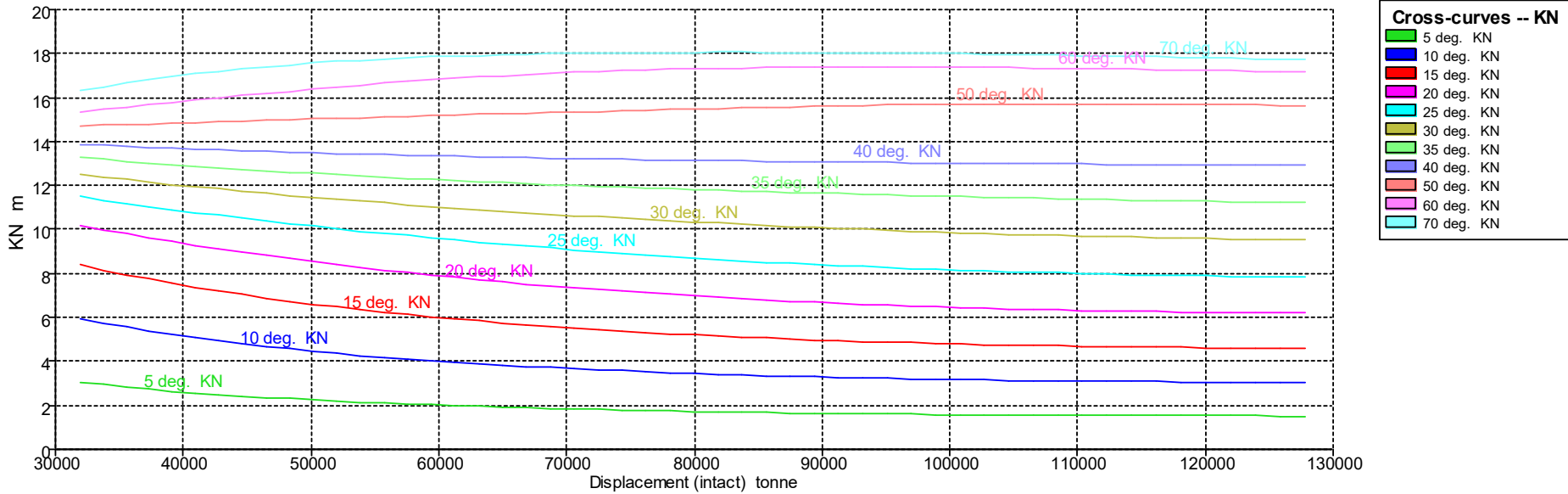
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
31936	3,900	-2,000	0,000	3,053	5,932	8,377	10,172	11,492	12,496	13,271	13,869	14,703	15,346	16,301
33730	4,100	-2,000	0,000	2,939	5,733	8,157	9,984	11,339	12,378	13,188	13,823	14,736	15,460	16,482
35532	4,300	-2,000	0,000	2,834	5,548	7,947	9,803	11,191	12,263	13,108	13,779	14,769	15,571	16,654
37341	4,500	-2,000	0,000	2,738	5,377	7,746	9,627	11,047	12,152	13,030	13,736	14,802	15,681	16,812
39156	4,700	-2,000	0,000	2,650	5,218	7,555	9,457	10,908	12,044	12,955	13,695	14,835	15,787	16,956
40976	4,900	-2,000	0,000	2,568	5,070	7,374	9,292	10,772	11,940	12,882	13,656	14,868	15,891	17,086
42802	5,100	-2,000	0,000	2,493	4,931	7,202	9,132	10,641	11,838	12,811	13,618	14,900	15,992	17,203
44633	5,300	-2,000	0,000	2,423	4,802	7,039	8,977	10,514	11,740	12,743	13,582	14,932	16,092	17,308
46468	5,500	-2,000	0,000	2,358	4,682	6,886	8,827	10,390	11,645	12,677	13,547	14,964	16,191	17,404
48307	5,700	-2,000	0,000	2,298	4,570	6,741	8,682	10,270	11,552	12,614	13,515	14,996	16,288	17,486
50150	5,900	-2,000	0,000	2,243	4,464	6,603	8,542	10,153	11,462	12,553	13,484	15,027	16,383	17,566
51997	6,100	-2,000	0,000	2,191	4,366	6,474	8,407	10,039	11,375	12,493	13,455	15,059	16,474	17,636
53847	6,300	-2,000	0,000	2,142	4,274	6,351	8,277	9,929	11,291	12,436	13,427	15,088	16,562	17,699
55699	6,500	-2,000	0,000	2,097	4,188	6,235	8,152	9,822	11,209	12,381	13,400	15,118	16,645	17,754
57554	6,700	-2,000	0,000	2,055	4,107	6,126	8,033	9,718	11,129	12,328	13,375	15,147	16,724	17,802
59411	6,900	-2,000	0,000	2,016	4,031	6,022	7,919	9,617	11,052	12,277	13,351	15,177	16,799	17,845
61271	7,100	-2,000	0,000	1,979	3,960	5,925	7,810	9,518	10,977	12,228	13,328	15,205	16,867	17,882
63132	7,300	-2,000	0,000	1,945	3,894	5,833	7,706	9,423	10,904	12,181	13,306	15,233	16,933	17,915
64997	7,500	-2,000	0,000	1,913	3,831	5,745	7,606	9,330	10,833	12,135	13,285	15,261	16,993	17,943
66864	7,700	-2,000	0,000	1,883	3,773	5,663	7,512	9,241	10,765	12,091	13,265	15,289	17,048	17,969
68733	7,900	-2,000	0,000	1,855	3,718	5,585	7,422	9,154	10,698	12,049	13,246	15,316	17,098	17,990
70604	8,100	-2,000	0,000	1,828	3,666	5,512	7,336	9,070	10,634	12,007	13,227	15,344	17,144	18,005
72477	8,300	-2,000	0,000	1,804	3,618	5,443	7,254	8,990	10,571	11,968	13,209	15,371	17,184	18,021
74352	8,500	-2,000	0,000	1,781	3,572	5,378	7,177	8,913	10,510	11,929	13,192	15,397	17,220	18,034
76229	8,700	-2,000	0,000	1,759	3,530	5,316	7,103	8,839	10,452	11,891	13,175	15,424	17,252	18,043
78107	8,900	-2,000	0,000	1,739	3,490	5,258	7,033	8,768	10,395	11,855	13,159	15,451	17,280	18,050
79986	9,100	-2,000	0,000	1,720	3,452	5,204	6,967	8,700	10,340	11,820	13,144	15,477	17,304	18,055
81867	9,300	-2,000	0,000	1,703	3,417	5,153	6,904	8,635	10,286	11,786	13,129	15,504	17,325	18,057
83749	9,500	-2,000	0,000	1,686	3,385	5,105	6,845	8,574	10,235	11,752	13,115	15,529	17,342	18,058
85634	9,700	-2,000	0,000	1,671	3,354	5,060	6,789	8,516	10,185	11,720	13,102	15,554	17,356	18,056
87520	9,900	-2,000	0,000	1,656	3,325	5,018	6,737	8,460	10,137	11,688	13,090	15,577	17,367	18,052
89408	10,100	-2,000	0,000	1,643	3,299	4,978	6,687	8,407	10,091	11,657	13,078	15,599	17,376	18,047
91299	10,300	-2,000	0,000	1,631	3,274	4,941	6,640	8,358	10,046	11,627	13,066	15,619	17,381	18,040

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
93192	10,500	-2,000	0,000	1,619	3,250	4,907	6,597	8,311	10,003	11,599	13,055	15,638	17,385	18,031
95087	10,700	-2,000	0,000	1,608	3,228	4,875	6,556	8,266	9,962	11,571	13,044	15,654	17,386	18,022
96985	10,900	-2,000	0,000	1,598	3,208	4,845	6,517	8,224	9,923	11,543	13,033	15,669	17,384	18,011
98887	11,100	-2,000	0,000	1,589	3,189	4,817	6,482	8,185	9,886	11,517	13,023	15,682	17,381	17,999
100792	11,300	-2,000	0,000	1,580	3,172	4,791	6,448	8,148	9,850	11,492	13,013	15,693	17,375	17,986
102700	11,500	-2,000	0,000	1,572	3,156	4,767	6,417	8,114	9,817	11,467	13,004	15,702	17,368	17,972
104611	11,700	-2,000	0,000	1,564	3,141	4,744	6,389	8,081	9,785	11,443	12,995	15,709	17,358	17,957
106526	11,900	-2,000	0,000	1,558	3,127	4,724	6,362	8,050	9,755	11,419	12,987	15,713	17,347	17,940
108444	12,100	-2,000	0,000	1,551	3,115	4,705	6,338	8,022	9,728	11,397	12,979	15,716	17,335	17,922
110366	12,300	-2,000	0,000	1,546	3,104	4,688	6,316	7,996	9,700	11,376	12,971	15,716	17,321	17,904
112291	12,500	-2,000	0,000	1,540	3,093	4,672	6,295	7,971	9,675	11,356	12,964	15,715	17,305	17,886
114220	12,700	-2,000	0,000	1,536	3,084	4,658	6,277	7,948	9,650	11,337	12,957	15,711	17,288	17,866
116152	12,900	-2,000	0,000	1,532	3,075	4,646	6,260	7,927	9,628	11,319	12,951	15,706	17,271	17,846
118089	13,100	-2,000	0,000	1,528	3,068	4,635	6,246	7,909	9,606	11,301	12,945	15,699	17,251	17,826
120029	13,300	-2,000	0,000	1,525	3,061	4,625	6,232	7,891	9,586	11,285	12,940	15,690	17,231	17,804
121975	13,500	-2,000	0,000	1,522	3,056	4,616	6,221	7,874	9,568	11,270	12,935	15,679	17,210	17,782
123924	13,700	-2,000	0,000	1,519	3,051	4,609	6,210	7,859	9,551	11,256	12,930	15,667	17,187	17,759
125879	13,900	-2,000	0,000	1,517	3,047	4,603	6,202	7,846	9,535	11,243	12,926	15,653	17,164	17,736
127839	14,100	-2,000	0,000	1,516	3,044	4,598	6,194	7,834	9,520	11,231	12,922	15,637	17,140	17,712



Initial Trim = -2,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

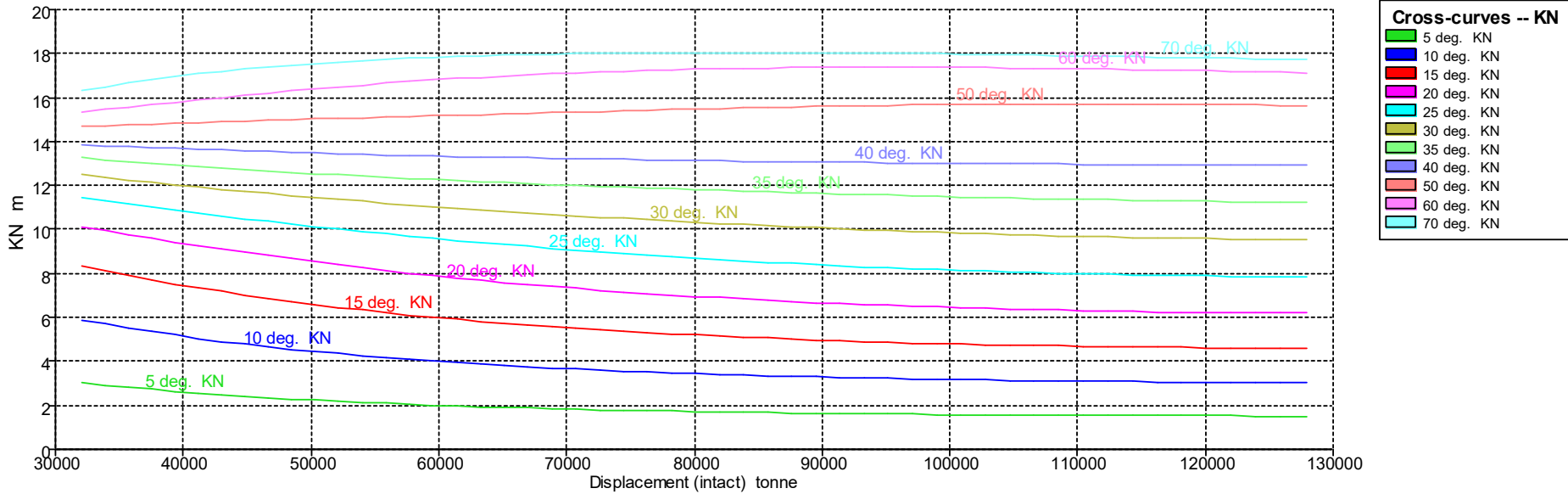
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
32118	3,900	-2,500	0,000	3,035	5,899	8,339	10,140	11,466	12,475	13,253	13,856	14,698	15,352	16,313
33910	4,100	-2,500	0,000	2,922	5,703	8,122	9,953	11,314	12,358	13,172	13,811	14,730	15,464	16,492
35710	4,300	-2,500	0,000	2,819	5,521	7,914	9,774	11,167	12,245	13,093	13,767	14,763	15,574	16,657
37516	4,500	-2,500	0,000	2,724	5,352	7,715	9,599	11,024	12,134	13,016	13,725	14,796	15,684	16,808
39329	4,700	-2,500	0,000	2,637	5,195	7,526	9,430	10,886	12,027	12,942	13,685	14,829	15,791	16,947
41148	4,900	-2,500	0,000	2,557	5,048	7,346	9,266	10,751	11,924	12,870	13,646	14,861	15,896	17,073
42971	5,100	-2,500	0,000	2,482	4,912	7,176	9,107	10,621	11,823	12,800	13,609	14,894	15,997	17,187
44800	5,300	-2,500	0,000	2,413	4,784	7,015	8,953	10,494	11,725	12,732	13,573	14,926	16,097	17,292
46633	5,500	-2,500	0,000	2,349	4,665	6,863	8,804	10,371	11,630	12,666	13,538	14,957	16,195	17,383
48470	5,700	-2,500	0,000	2,290	4,554	6,719	8,660	10,251	11,538	12,603	13,506	14,989	16,291	17,471
50310	5,900	-2,500	0,000	2,235	4,450	6,583	8,521	10,135	11,448	12,542	13,475	15,021	16,386	17,549
52154	6,100	-2,500	0,000	2,184	4,352	6,455	8,386	10,022	11,362	12,483	13,445	15,052	16,477	17,618
54002	6,300	-2,500	0,000	2,136	4,261	6,333	8,257	9,912	11,277	12,426	13,417	15,083	16,563	17,680
55852	6,500	-2,500	0,000	2,091	4,176	6,218	8,133	9,805	11,195	12,371	13,391	15,113	16,644	17,735
57704	6,700	-2,500	0,000	2,049	4,096	6,110	8,015	9,701	11,116	12,317	13,366	15,142	16,721	17,783
59558	6,900	-2,500	0,000	2,010	4,021	6,008	7,901	9,600	11,038	12,266	13,342	15,172	16,792	17,826
61414	7,100	-2,500	0,000	1,974	3,951	5,911	7,793	9,502	10,963	12,217	13,319	15,201	16,861	17,863
63273	7,300	-2,500	0,000	1,940	3,885	5,819	7,689	9,407	10,891	12,169	13,297	15,229	16,924	17,897
65134	7,500	-2,500	0,000	1,908	3,823	5,733	7,591	9,315	10,820	12,123	13,276	15,258	16,984	17,925
66998	7,700	-2,500	0,000	1,879	3,765	5,651	7,497	9,225	10,751	12,079	13,255	15,286	17,038	17,951
68864	7,900	-2,500	0,000	1,851	3,710	5,574	7,408	9,139	10,685	12,036	13,236	15,314	17,087	17,970
70732	8,100	-2,500	0,000	1,825	3,659	5,501	7,322	9,056	10,620	11,995	13,217	15,341	17,131	17,989
72602	8,300	-2,500	0,000	1,801	3,611	5,433	7,242	8,976	10,558	11,955	13,200	15,368	17,171	18,005
74474	8,500	-2,500	0,000	1,778	3,566	5,368	7,165	8,899	10,497	11,917	13,183	15,395	17,206	18,018
76347	8,700	-2,500	0,000	1,756	3,524	5,307	7,091	8,825	10,438	11,879	13,166	15,422	17,238	18,028
78221	8,900	-2,500	0,000	1,736	3,484	5,250	7,022	8,754	10,381	11,843	13,150	15,449	17,266	18,035
80097	9,100	-2,500	0,000	1,718	3,447	5,196	6,956	8,687	10,326	11,808	13,135	15,476	17,290	18,040
81974	9,300	-2,500	0,000	1,700	3,413	5,145	6,894	8,623	10,273	11,774	13,120	15,502	17,311	18,042
83854	9,500	-2,500	0,000	1,684	3,380	5,098	6,835	8,562	10,221	11,741	13,107	15,527	17,328	18,043
85735	9,700	-2,500	0,000	1,669	3,350	5,053	6,780	8,504	10,171	11,708	13,093	15,550	17,342	18,041
87618	9,900	-2,500	0,000	1,655	3,321	5,011	6,727	8,448	10,123	11,677	13,081	15,573	17,354	18,038
89504	10,100	-2,500	0,000	1,641	3,295	4,972	6,678	8,396	10,077	11,646	13,068	15,594	17,362	18,033
91391	10,300	-2,500	0,000	1,629	3,270	4,935	6,632	8,346	10,033	11,616	13,057	15,613	17,368	18,027

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
93282	10,500	-2,500	0,000	1,617	3,247	4,901	6,588	8,299	9,991	11,587	13,046	15,630	17,372	18,019
95175	10,700	-2,500	0,000	1,606	3,225	4,869	6,548	8,255	9,950	11,560	13,035	15,646	17,373	18,009
97071	10,900	-2,500	0,000	1,596	3,205	4,839	6,509	8,214	9,911	11,532	13,025	15,660	17,372	17,999
98970	11,100	-2,500	0,000	1,587	3,186	4,811	6,474	8,175	9,874	11,505	13,015	15,673	17,368	17,987
100872	11,300	-2,500	0,000	1,578	3,169	4,785	6,440	8,138	9,839	11,481	13,006	15,683	17,363	17,974
102778	11,500	-2,500	0,000	1,570	3,153	4,761	6,410	8,103	9,805	11,456	12,997	15,691	17,356	17,961
104687	11,700	-2,500	0,000	1,563	3,138	4,739	6,381	8,071	9,775	11,432	12,988	15,697	17,346	17,944
106599	11,900	-2,500	0,000	1,556	3,124	4,719	6,354	8,040	9,745	11,409	12,980	15,701	17,336	17,929
108515	12,100	-2,500	0,000	1,550	3,112	4,700	6,330	8,012	9,716	11,387	12,972	15,704	17,323	17,912
110434	12,300	-2,500	0,000	1,544	3,101	4,683	6,308	7,985	9,690	11,367	12,964	15,704	17,309	17,894
112356	12,500	-2,500	0,000	1,539	3,090	4,667	6,288	7,961	9,665	11,347	12,957	15,702	17,294	17,876
114282	12,700	-2,500	0,000	1,534	3,081	4,653	6,269	7,939	9,641	11,328	12,950	15,699	17,278	17,857
116212	12,900	-2,500	0,000	1,530	3,072	4,641	6,253	7,918	9,618	11,310	12,944	15,693	17,260	17,837
118145	13,100	-2,500	0,000	1,527	3,065	4,629	6,238	7,898	9,597	11,293	12,938	15,686	17,241	17,816
120083	13,300	-2,500	0,000	1,523	3,059	4,620	6,225	7,882	9,578	11,277	12,933	15,677	17,221	17,795
122024	13,500	-2,500	0,000	1,520	3,053	4,611	6,213	7,866	9,559	11,262	12,928	15,667	17,199	17,774
123970	13,700	-2,500	0,000	1,518	3,048	4,604	6,203	7,851	9,542	11,249	12,924	15,654	17,177	17,752
125921	13,900	-2,500	0,000	1,516	3,044	4,598	6,194	7,838	9,527	11,236	12,919	15,640	17,154	17,729
127876	14,100	-2,500	0,000	1,514	3,041	4,593	6,187	7,826	9,512	11,224	12,914	15,625	17,129	17,705



Initial Trim = -3 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

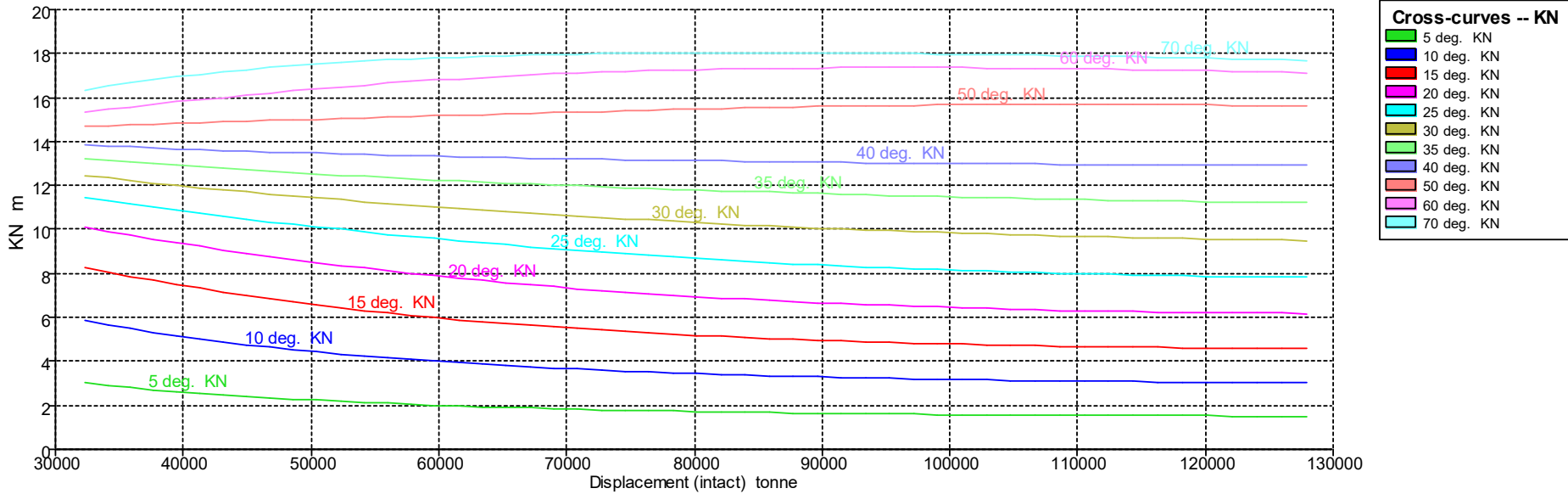
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
32305	3,900	-3,000	0,000	3,016	5,865	8,297	10,102	11,435	12,448	13,231	13,839	14,695	15,362	16,332
34095	4,100	-3,000	0,000	2,905	5,672	8,083	9,919	11,285	12,334	13,152	13,796	14,726	15,474	16,503
35892	4,300	-3,000	0,000	2,804	5,492	7,878	9,740	11,140	12,222	13,075	13,753	14,758	15,583	16,660
37696	4,500	-3,000	0,000	2,710	5,326	7,681	9,567	10,998	12,114	13,000	13,712	14,790	15,691	16,806
39506	4,700	-3,000	0,000	2,624	5,171	7,495	9,400	10,861	12,008	12,927	13,673	14,823	15,798	16,939
41322	4,900	-3,000	0,000	2,545	5,026	7,317	9,237	10,728	11,905	12,856	13,635	14,856	15,903	17,061
43143	5,100	-3,000	0,000	2,472	4,891	7,149	9,080	10,598	11,805	12,786	13,598	14,887	16,005	17,173
44969	5,300	-3,000	0,000	2,404	4,765	6,990	8,927	10,473	11,708	12,719	13,563	14,920	16,104	17,273
46799	5,500	-3,000	0,000	2,340	4,648	6,840	8,779	10,350	11,614	12,654	13,529	14,952	16,202	17,368
48634	5,700	-3,000	0,000	2,282	4,538	6,697	8,636	10,231	11,522	12,591	13,496	14,983	16,297	17,454
50472	5,900	-3,000	0,000	2,227	4,435	6,563	8,498	10,115	11,433	12,530	13,465	15,014	16,389	17,531
52313	6,100	-3,000	0,000	2,176	4,339	6,435	8,365	10,003	11,347	12,472	13,436	15,046	16,478	17,600
54158	6,300	-3,000	0,000	2,129	4,248	6,315	8,237	9,893	11,263	12,415	13,408	15,077	16,564	17,661
56005	6,500	-3,000	0,000	2,085	4,164	6,202	8,114	9,787	11,181	12,360	13,382	15,108	16,644	17,716
57854	6,700	-3,000	0,000	2,044	4,085	6,094	7,996	9,684	11,102	12,306	13,356	15,138	16,717	17,764
59705	6,900	-3,000	0,000	2,005	4,011	5,993	7,884	9,583	11,025	12,255	13,332	15,167	16,788	17,806
61559	7,100	-3,000	0,000	1,969	3,941	5,897	7,776	9,486	10,950	12,206	13,309	15,197	16,854	17,844
63415	7,300	-3,000	0,000	1,936	3,876	5,806	7,673	9,391	10,877	12,158	13,288	15,226	16,916	17,877
65274	7,500	-3,000	0,000	1,904	3,814	5,721	7,576	9,299	10,806	12,112	13,266	15,255	16,974	17,907
67134	7,700	-3,000	0,000	1,875	3,757	5,640	7,483	9,210	10,738	12,068	13,246	15,283	17,027	17,929
68997	7,900	-3,000	0,000	1,847	3,703	5,563	7,394	9,124	10,671	12,025	13,227	15,311	17,075	17,952
70861	8,100	-3,000	0,000	1,822	3,652	5,491	7,310	9,041	10,607	11,983	13,208	15,339	17,118	17,972
72728	8,300	-3,000	0,000	1,798	3,605	5,423	7,229	8,962	10,544	11,944	13,190	15,366	17,157	17,988
74596	8,500	-3,000	0,000	1,775	3,560	5,359	7,153	8,885	10,484	11,905	13,174	15,394	17,192	18,001
76465	8,700	-3,000	0,000	1,754	3,518	5,299	7,080	8,812	10,425	11,868	13,157	15,421	17,223	18,011
78336	8,900	-3,000	0,000	1,734	3,479	5,242	7,012	8,742	10,368	11,831	13,142	15,448	17,251	18,019
80209	9,100	-3,000	0,000	1,716	3,443	5,189	6,946	8,675	10,313	11,796	13,127	15,474	17,275	18,024
82083	9,300	-3,000	0,000	1,698	3,408	5,138	6,885	8,611	10,259	11,762	13,112	15,500	17,296	18,026
83959	9,500	-3,000	0,000	1,682	3,376	5,091	6,826	8,550	10,208	11,729	13,098	15,524	17,314	18,027
85838	9,700	-3,000	0,000	1,667	3,346	5,047	6,771	8,492	10,158	11,697	13,085	15,547	17,328	18,026
87718	9,900	-3,000	0,000	1,653	3,318	5,005	6,719	8,437	10,111	11,665	13,072	15,568	17,339	18,023
89601	10,100	-3,000	0,000	1,640	3,291	4,966	6,670	8,385	10,065	11,635	13,060	15,588	17,348	18,019
91486	10,300	-3,000	0,000	1,627	3,267	4,930	6,624	8,336	10,020	11,605	13,049	15,606	17,354	18,013

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
93374	10,500	-3,000	0,000	1,616	3,243	4,896	6,581	8,289	9,978	11,576	13,038	15,623	17,358	18,005
95265	10,700	-3,000	0,000	1,605	3,222	4,864	6,540	8,245	9,938	11,548	13,028	15,638	17,359	17,996
97159	10,900	-3,000	0,000	1,595	3,202	4,834	6,502	8,204	9,899	11,522	13,017	15,652	17,358	17,986
99056	11,100	-3,000	0,000	1,586	3,183	4,806	6,466	8,165	9,863	11,495	13,008	15,663	17,355	17,975
100956	11,300	-3,000	0,000	1,577	3,166	4,781	6,433	8,128	9,828	11,470	12,998	15,673	17,350	17,962
102859	11,500	-3,000	0,000	1,569	3,150	4,757	6,402	8,093	9,795	11,446	12,989	15,680	17,343	17,947
104766	11,700	-3,000	0,000	1,562	3,135	4,735	6,374	8,061	9,764	11,423	12,981	15,686	17,334	17,933
106676	11,900	-3,000	0,000	1,555	3,122	4,714	6,348	8,031	9,735	11,400	12,973	15,689	17,323	17,917
108589	12,100	-3,000	0,000	1,549	3,109	4,696	6,323	8,003	9,706	11,378	12,965	15,691	17,311	17,901
110505	12,300	-3,000	0,000	1,543	3,098	4,679	6,301	7,976	9,680	11,358	12,957	15,691	17,298	17,884
112425	12,500	-3,000	0,000	1,538	3,088	4,663	6,281	7,952	9,654	11,338	12,951	15,689	17,283	17,866
114348	12,700	-3,000	0,000	1,533	3,078	4,649	6,262	7,930	9,632	11,320	12,944	15,686	17,266	17,847
116275	12,900	-3,000	0,000	1,529	3,070	4,636	6,246	7,909	9,610	11,302	12,938	15,680	17,249	17,827
118206	13,100	-3,000	0,000	1,525	3,062	4,625	6,231	7,890	9,589	11,285	12,932	15,673	17,230	17,807
120141	13,300	-3,000	0,000	1,522	3,056	4,615	6,218	7,872	9,569	11,270	12,927	15,664	17,210	17,786
122079	13,500	-3,000	0,000	1,519	3,050	4,607	6,206	7,858	9,551	11,255	12,922	15,653	17,189	17,765
124021	13,700	-3,000	0,000	1,517	3,045	4,599	6,196	7,843	9,534	11,241	12,917	15,641	17,167	17,743
125968	13,900	-3,000	0,000	1,515	3,041	4,593	6,187	7,831	9,519	11,229	12,912	15,627	17,143	17,720
127920	14,100	-3,000	0,000	1,513	3,038	4,588	6,180	7,819	9,505	11,217	12,907	15,611	17,119	17,697



Initial Trim = -3,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

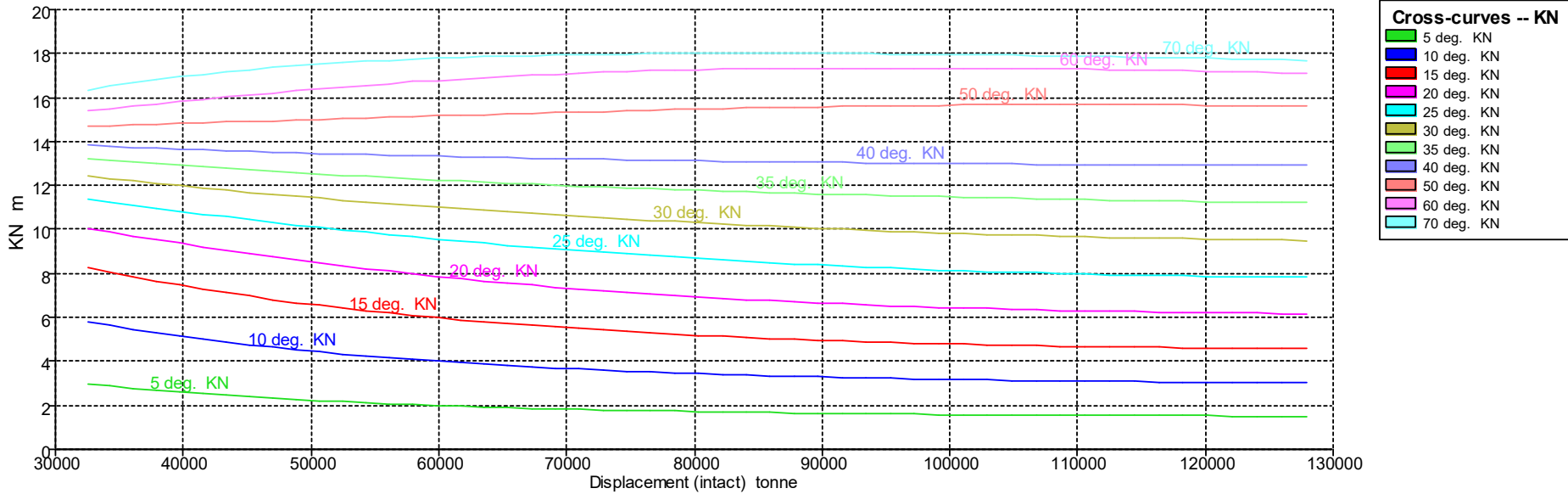
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
32497	3,900	-3,500	0,000	2,996	5,829	8,252	10,060	11,398	12,417	13,205	13,820	14,692	15,375	16,352
34284	4,100	-3,500	0,000	2,888	5,639	8,040	9,879	11,251	12,305	13,128	13,778	14,723	15,488	16,515
36078	4,300	-3,500	0,000	2,788	5,462	7,839	9,703	11,108	12,196	13,053	13,737	14,754	15,596	16,665
37879	4,500	-3,500	0,000	2,696	5,299	7,646	9,533	10,969	12,090	12,980	13,698	14,786	15,703	16,803
39686	4,700	-3,500	0,000	2,612	5,146	7,462	9,367	10,834	11,986	12,909	13,659	14,818	15,808	16,931
41499	4,900	-3,500	0,000	2,533	5,004	7,287	9,207	10,702	11,884	12,839	13,622	14,851	15,912	17,051
43318	5,100	-3,500	0,000	2,461	4,871	7,121	9,051	10,574	11,786	12,771	13,586	14,883	16,015	17,157
45141	5,300	-3,500	0,000	2,394	4,746	6,964	8,900	10,449	11,690	12,705	13,552	14,915	16,114	17,260
46968	5,500	-3,500	0,000	2,331	4,630	6,815	8,753	10,328	11,596	12,641	13,519	14,947	16,211	17,353
48800	5,700	-3,500	0,000	2,273	4,522	6,675	8,611	10,210	11,505	12,579	13,487	14,979	16,304	17,437
50635	5,900	-3,500	0,000	2,220	4,420	6,542	8,475	10,095	11,417	12,518	13,456	15,009	16,394	17,513
52474	6,100	-3,500	0,000	2,169	4,325	6,416	8,343	9,983	11,331	12,460	13,427	15,041	16,481	17,580
54315	6,300	-3,500	0,000	2,123	4,236	6,297	8,216	9,874	11,248	12,403	13,399	15,072	16,564	17,641
56158	6,500	-3,500	0,000	2,079	4,152	6,185	8,094	9,769	11,166	12,348	13,373	15,103	16,641	17,695
58005	6,700	-3,500	0,000	2,038	4,074	6,079	7,977	9,666	11,087	12,295	13,347	15,134	16,715	17,743
59854	6,900	-3,500	0,000	2,000	4,000	5,978	7,866	9,566	11,011	12,244	13,323	15,164	16,783	17,787
61705	7,100	-3,500	0,000	1,965	3,932	5,883	7,759	9,469	10,936	12,195	13,300	15,194	16,847	17,825
63558	7,300	-3,500	0,000	1,931	3,867	5,794	7,658	9,375	10,863	12,147	13,279	15,223	16,907	17,858
65414	7,500	-3,500	0,000	1,900	3,806	5,709	7,561	9,283	10,793	12,101	13,258	15,252	16,964	17,885
67271	7,700	-3,500	0,000	1,871	3,749	5,629	7,469	9,195	10,725	12,056	13,237	15,281	17,015	17,911
69130	7,900	-3,500	0,000	1,844	3,696	5,553	7,381	9,110	10,658	12,014	13,218	15,309	17,062	17,934
70991	8,100	-3,500	0,000	1,819	3,646	5,482	7,297	9,027	10,594	11,972	13,200	15,337	17,105	17,954
72854	8,300	-3,500	0,000	1,795	3,599	5,414	7,218	8,948	10,531	11,932	13,182	15,365	17,143	17,970
74718	8,500	-3,500	0,000	1,772	3,555	5,351	7,142	8,872	10,471	11,894	13,165	15,393	17,178	17,984
76584	8,700	-3,500	0,000	1,751	3,513	5,291	7,070	8,799	10,412	11,856	13,149	15,420	17,209	17,994
78452	8,900	-3,500	0,000	1,732	3,475	5,235	7,002	8,730	10,355	11,820	13,133	15,447	17,236	18,002
80321	9,100	-3,500	0,000	1,714	3,438	5,182	6,937	8,663	10,300	11,785	13,119	15,473	17,260	18,007
82193	9,300	-3,500	0,000	1,696	3,404	5,132	6,876	8,600	10,247	11,751	13,104	15,497	17,281	18,010
84066	9,500	-3,500	0,000	1,680	3,372	5,085	6,818	8,539	10,195	11,718	13,090	15,521	17,299	18,011
85942	9,700	-3,500	0,000	1,665	3,342	5,041	6,763	8,482	10,146	11,686	13,077	15,543	17,313	18,010
87820	9,900	-3,500	0,000	1,651	3,314	5,000	6,711	8,427	10,098	11,655	13,064	15,563	17,325	18,008
89700	10,100	-3,500	0,000	1,638	3,288	4,961	6,663	8,375	10,053	11,624	13,052	15,583	17,334	18,004
91584	10,300	-3,500	0,000	1,626	3,263	4,925	6,617	8,326	10,009	11,595	13,041	15,600	17,340	17,999

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
93470	10,500	-3,500	0,000	1,614	3,240	4,891	6,574	8,280	9,967	11,566	13,030	15,616	17,344	17,992
95359	10,700	-3,500	0,000	1,604	3,219	4,859	6,533	8,236	9,927	11,538	13,020	15,630	17,345	17,983
97251	10,900	-3,500	0,000	1,594	3,199	4,830	6,495	8,195	9,889	11,511	13,010	15,643	17,344	17,973
99145	11,100	-3,500	0,000	1,584	3,181	4,802	6,460	8,156	9,852	11,485	13,000	15,653	17,341	17,961
101043	11,300	-3,500	0,000	1,576	3,164	4,776	6,427	8,119	9,818	11,460	12,991	15,662	17,336	17,948
102944	11,500	-3,500	0,000	1,568	3,148	4,753	6,396	8,084	9,785	11,436	12,982	15,669	17,329	17,934
104848	11,700	-3,500	0,000	1,561	3,133	4,731	6,368	8,052	9,754	11,413	12,974	15,674	17,321	17,920
106755	11,900	-3,500	0,000	1,554	3,119	4,710	6,341	8,022	9,725	11,391	12,966	15,677	17,310	17,905
108666	12,100	-3,500	0,000	1,548	3,107	4,692	6,317	7,994	9,697	11,370	12,958	15,679	17,299	17,890
110580	12,300	-3,500	0,000	1,542	3,096	4,675	6,295	7,968	9,671	11,350	12,951	15,678	17,285	17,873
112497	12,500	-3,500	0,000	1,537	3,085	4,659	6,275	7,944	9,646	11,330	12,945	15,676	17,271	17,855
114418	12,700	-3,500	0,000	1,532	3,076	4,645	6,256	7,921	9,622	11,312	12,938	15,673	17,255	17,836
116343	12,900	-3,500	0,000	1,528	3,068	4,632	6,240	7,901	9,601	11,294	12,932	15,667	17,237	17,817
118271	13,100	-3,500	0,000	1,524	3,060	4,621	6,225	7,882	9,581	11,278	12,927	15,660	17,218	17,797
120203	13,300	-3,500	0,000	1,521	3,054	4,611	6,211	7,865	9,562	11,263	12,922	15,651	17,198	17,777
122138	13,500	-3,500	0,000	1,518	3,048	4,603	6,200	7,849	9,544	11,248	12,917	15,640	17,177	17,756
124077	13,700	-3,500	0,000	1,516	3,043	4,595	6,190	7,836	9,527	11,235	12,911	15,627	17,155	17,734
126021	13,900	-3,500	0,000	1,514	3,039	4,589	6,181	7,824	9,512	11,222	12,906	15,613	17,132	17,711
127969	14,100	-3,500	0,000	1,512	3,035	4,584	6,174	7,812	9,498	11,211	12,900	15,598	17,108	17,688



Initial Trim = -4 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

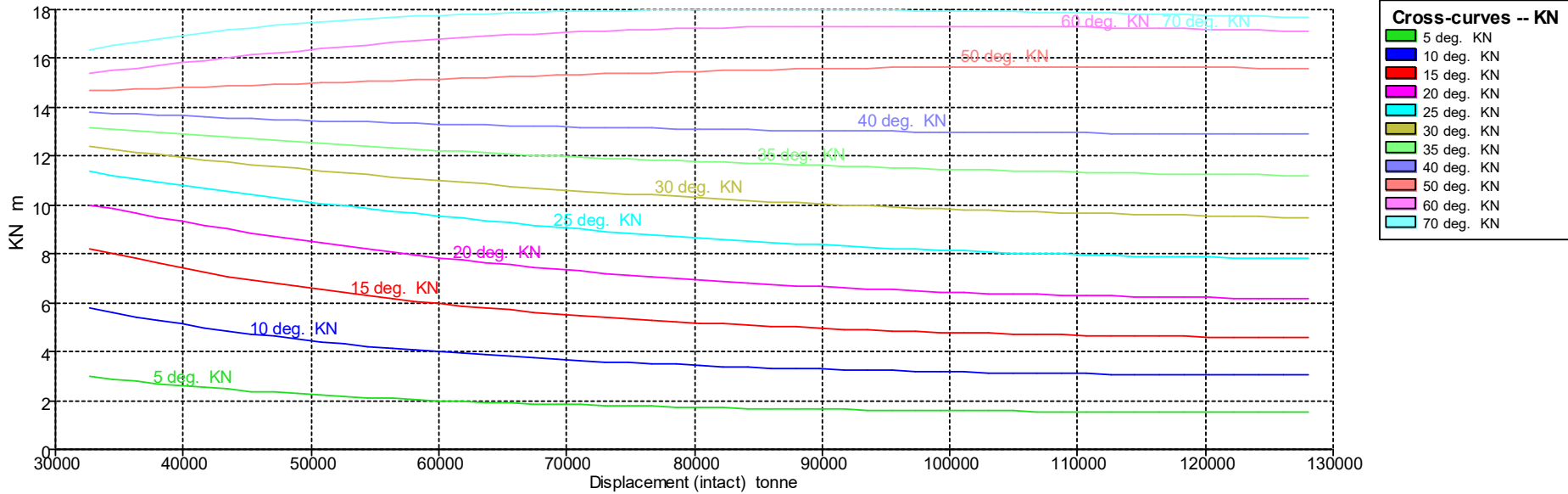
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
32694	3,900	-4,000	0,000	2,976	5,790	8,202	10,013	11,356	12,380	13,175	13,798	14,689	15,389	16,373
34477	4,100	-4,000	0,000	2,870	5,604	7,996	9,835	11,213	12,272	13,102	13,758	14,720	15,504	16,527
36268	4,300	-4,000	0,000	2,772	5,431	7,798	9,663	11,073	12,166	13,029	13,719	14,752	15,613	16,670
38066	4,500	-4,000	0,000	2,682	5,270	7,608	9,496	10,937	12,062	12,958	13,681	14,783	15,719	16,803
39870	4,700	-4,000	0,000	2,599	5,120	7,427	9,332	10,803	11,961	12,889	13,644	14,814	15,822	16,928
41680	4,900	-4,000	0,000	2,522	4,980	7,255	9,174	10,674	11,861	12,821	13,609	14,846	15,925	17,040
43495	5,100	-4,000	0,000	2,450	4,850	7,092	9,020	10,547	11,764	12,754	13,574	14,879	16,026	17,148
45315	5,300	-4,000	0,000	2,384	4,727	6,937	8,870	10,424	11,669	12,690	13,540	14,911	16,125	17,247
47140	5,500	-4,000	0,000	2,322	4,613	6,790	8,726	10,304	11,577	12,626	13,508	14,942	16,221	17,338
48968	5,700	-4,000	0,000	2,265	4,506	6,652	8,585	10,187	11,487	12,565	13,476	14,975	16,312	17,420
50800	5,900	-4,000	0,000	2,212	4,405	6,521	8,450	10,073	11,400	12,505	13,446	15,006	16,400	17,494
52635	6,100	-4,000	0,000	2,162	4,311	6,397	8,320	9,962	11,315	12,447	13,417	15,037	16,484	17,560
54472	6,300	-4,000	0,000	2,116	4,223	6,279	8,194	9,855	11,232	12,391	13,390	15,068	16,562	17,620
56313	6,500	-4,000	0,000	2,073	4,141	6,168	8,074	9,750	11,151	12,337	13,364	15,100	16,639	17,674
58157	6,700	-4,000	0,000	2,033	4,063	6,063	7,958	9,648	11,073	12,284	13,339	15,131	16,711	17,722
60003	6,900	-4,000	0,000	1,995	3,991	5,964	7,848	9,548	10,996	12,233	13,315	15,161	16,779	17,766
61851	7,100	-4,000	0,000	1,960	3,923	5,870	7,743	9,452	10,922	12,184	13,292	15,191	16,841	17,805
63702	7,300	-4,000	0,000	1,927	3,859	5,781	7,642	9,358	10,850	12,136	13,270	15,221	16,899	17,835
65554	7,500	-4,000	0,000	1,897	3,799	5,697	7,546	9,268	10,780	12,090	13,249	15,250	16,953	17,866
67408	7,700	-4,000	0,000	1,868	3,742	5,618	7,455	9,180	10,711	12,046	13,229	15,279	17,004	17,892
69264	7,900	-4,000	0,000	1,841	3,690	5,543	7,368	9,095	10,645	12,003	13,210	15,308	17,049	17,916
71121	8,100	-4,000	0,000	1,816	3,640	5,472	7,285	9,013	10,581	11,961	13,192	15,336	17,091	17,935
72980	8,300	-4,000	0,000	1,792	3,593	5,406	7,206	8,935	10,519	11,921	13,174	15,364	17,129	17,952
74840	8,500	-4,000	0,000	1,770	3,550	5,343	7,131	8,859	10,458	11,883	13,157	15,392	17,163	17,965
76703	8,700	-4,000	0,000	1,749	3,509	5,284	7,060	8,787	10,400	11,845	13,141	15,419	17,194	17,976
78568	8,900	-4,000	0,000	1,730	3,470	5,228	6,992	8,718	10,343	11,809	13,126	15,446	17,221	17,984
80435	9,100	-4,000	0,000	1,712	3,434	5,175	6,928	8,652	10,288	11,774	13,111	15,471	17,244	17,989
82303	9,300	-4,000	0,000	1,695	3,400	5,126	6,868	8,589	10,235	11,740	13,097	15,495	17,265	17,993
84174	9,500	-4,000	0,000	1,679	3,369	5,080	6,810	8,529	10,184	11,707	13,083	15,518	17,282	17,994
86047	9,700	-4,000	0,000	1,664	3,339	5,036	6,756	8,472	10,134	11,675	13,070	15,539	17,297	17,994
87923	9,900	-4,000	0,000	1,650	3,311	4,995	6,704	8,418	10,087	11,645	13,057	15,559	17,309	17,992
89802	10,100	-4,000	0,000	1,637	3,285	4,957	6,656	8,366	10,041	11,614	13,045	15,577	17,318	17,988
91684	10,300	-4,000	0,000	1,624	3,261	4,921	6,610	8,318	9,997	11,585	13,033	15,594	17,325	17,983

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
93568	10,500	-4,000	0,000	1,613	3,238	4,887	6,568	8,271	9,956	11,556	13,023	15,609	17,329	17,977
95455	10,700	-4,000	0,000	1,602	3,217	4,855	6,527	8,228	9,916	11,528	13,012	15,622	17,330	17,969
97345	10,900	-4,000	0,000	1,593	3,197	4,826	6,489	8,186	9,879	11,502	13,003	15,634	17,330	17,959
99237	11,100	-4,000	0,000	1,583	3,179	4,798	6,454	8,147	9,843	11,476	12,994	15,644	17,327	17,946
101133	11,300	-4,000	0,000	1,575	3,161	4,773	6,421	8,111	9,808	11,451	12,985	15,652	17,322	17,934
103032	11,500	-4,000	0,000	1,567	3,146	4,749	6,391	8,076	9,776	11,427	12,976	15,658	17,315	17,921
104934	11,700	-4,000	0,000	1,560	3,131	4,727	6,362	8,044	9,745	11,404	12,968	15,662	17,307	17,908
106839	11,900	-4,000	0,000	1,553	3,118	4,707	6,336	8,014	9,716	11,383	12,960	15,665	17,297	17,893
108747	12,100	-4,000	0,000	1,547	3,105	4,688	6,312	7,986	9,688	11,362	12,952	15,666	17,286	17,877
110659	12,300	-4,000	0,000	1,541	3,094	4,671	6,289	7,960	9,662	11,342	12,945	15,665	17,273	17,861
112573	12,500	-4,000	0,000	1,536	3,084	4,656	6,269	7,936	9,638	11,323	12,939	15,663	17,258	17,844
114492	12,700	-4,000	0,000	1,531	3,074	4,642	6,251	7,914	9,615	11,305	12,933	15,659	17,242	17,826
116414	12,900	-4,000	0,000	1,527	3,066	4,629	6,234	7,893	9,593	11,287	12,927	15,653	17,225	17,807
118339	13,100	-4,000	0,000	1,523	3,058	4,618	6,219	7,875	9,573	11,271	12,922	15,646	17,206	17,787
120269	13,300	-4,000	0,000	1,520	3,052	4,608	6,206	7,858	9,554	11,256	12,916	15,637	17,186	17,767
122202	13,500	-4,000	0,000	1,517	3,046	4,599	6,194	7,843	9,537	11,242	12,911	15,626	17,165	17,745
124138	13,700	-4,000	0,000	1,515	3,041	4,592	6,184	7,829	9,520	11,229	12,905	15,613	17,143	17,724
126079	13,900	-4,000	0,000	1,513	3,037	4,586	6,176	7,816	9,506	11,217	12,899	15,599	17,120	17,702
128023	14,100	-4,000	0,000	1,511	3,033	4,580	6,168	7,806	9,492	11,205	12,893	15,584	17,097	17,679



Initial Trim = 0,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

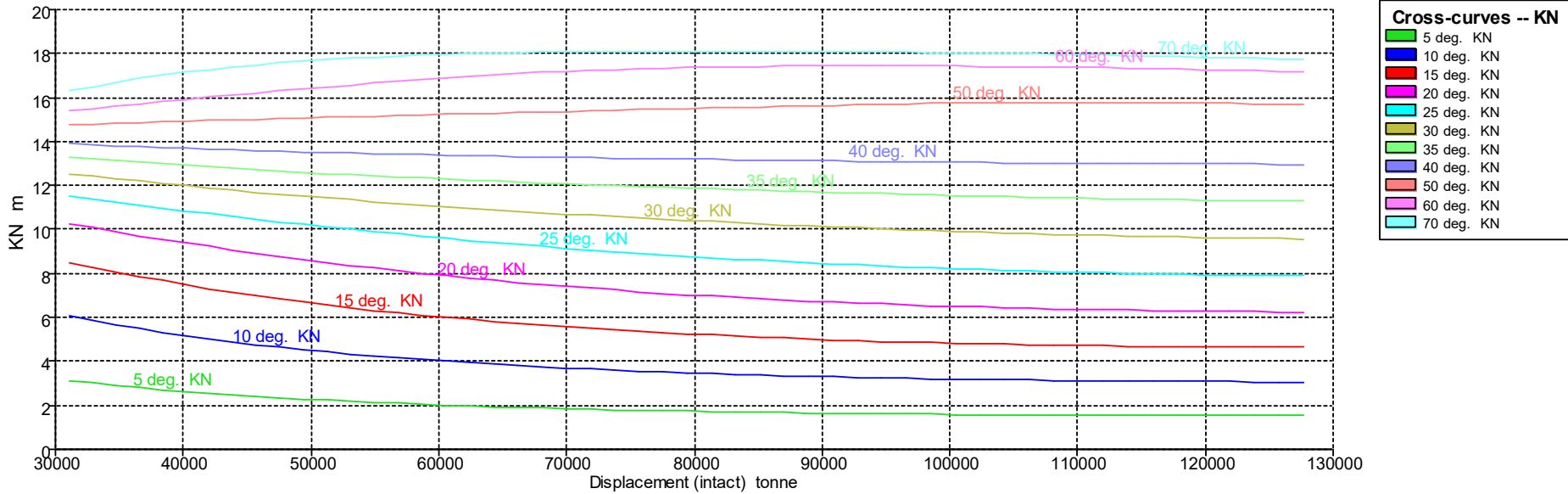
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
31101	3,900	0,500	0,000	3,131	6,059	8,501	10,258	11,548	12,532	13,294	13,890	14,748	15,389	16,294
32901	4,100	0,500	0,000	3,011	5,852	8,280	10,072	11,397	12,415	13,213	13,845	14,782	15,499	16,493
34709	4,300	0,500	0,000	2,902	5,661	8,068	9,891	11,250	12,302	13,134	13,803	14,817	15,607	16,686
36524	4,500	0,500	0,000	2,801	5,483	7,864	9,716	11,108	12,192	13,058	13,762	14,852	15,713	16,860
38345	4,700	0,500	0,000	2,708	5,318	7,670	9,547	10,970	12,086	12,985	13,723	14,885	15,817	17,014
40172	4,900	0,500	0,000	2,622	5,165	7,484	9,382	10,836	11,984	12,914	13,687	14,918	15,918	17,151
42005	5,100	0,500	0,000	2,543	5,022	7,309	9,223	10,707	11,885	12,846	13,652	14,949	16,016	17,273
43843	5,300	0,500	0,000	2,470	4,888	7,142	9,068	10,582	11,788	12,780	13,619	14,980	16,111	17,385
45685	5,500	0,500	0,000	2,402	4,763	6,985	8,919	10,459	11,695	12,717	13,588	15,010	16,205	17,484
47532	5,700	0,500	0,000	2,340	4,647	6,837	8,773	10,340	11,604	12,656	13,558	15,040	16,298	17,572
49383	5,900	0,500	0,000	2,281	4,538	6,696	8,633	10,224	11,516	12,597	13,530	15,069	16,389	17,649
51238	6,100	0,500	0,000	2,227	4,436	6,563	8,497	10,112	11,431	12,540	13,502	15,098	16,480	17,718
53098	6,300	0,500	0,000	2,177	4,340	6,437	8,366	10,002	11,349	12,486	13,476	15,126	16,568	17,778
54961	6,500	0,500	0,000	2,130	4,250	6,318	8,239	9,896	11,268	12,434	13,451	15,153	16,655	17,832
56828	6,700	0,500	0,000	2,086	4,166	6,205	8,118	9,792	11,190	12,384	13,426	15,181	16,741	17,878
58698	6,900	0,500	0,000	2,045	4,087	6,099	8,002	9,691	11,115	12,335	13,403	15,208	16,824	17,923
60571	7,100	0,500	0,000	2,006	4,013	5,998	7,891	9,593	11,041	12,288	13,380	15,234	16,902	17,961
62448	7,300	0,500	0,000	1,971	3,944	5,902	7,785	9,497	10,970	12,243	13,359	15,261	16,974	17,994
64327	7,500	0,500	0,000	1,937	3,879	5,812	7,684	9,405	10,901	12,198	13,338	15,287	17,040	18,022
66208	7,700	0,500	0,000	1,906	3,818	5,727	7,587	9,315	10,834	12,156	13,317	15,314	17,099	18,046
68092	7,900	0,500	0,000	1,876	3,761	5,647	7,495	9,229	10,768	12,114	13,298	15,340	17,153	18,066
69978	8,100	0,500	0,000	1,849	3,707	5,571	7,407	9,145	10,705	12,074	13,279	15,366	17,199	18,082
71866	8,300	0,500	0,000	1,823	3,656	5,499	7,324	9,064	10,644	12,034	13,261	15,391	17,241	18,095
73755	8,500	0,500	0,000	1,799	3,609	5,432	7,244	8,987	10,584	11,995	13,244	15,417	17,279	18,105
75647	8,700	0,500	0,000	1,777	3,565	5,369	7,169	8,913	10,526	11,958	13,227	15,443	17,311	18,113
77541	8,900	0,500	0,000	1,755	3,523	5,309	7,097	8,841	10,470	11,921	13,212	15,469	17,340	18,119
79438	9,100	0,500	0,000	1,736	3,484	5,252	7,029	8,773	10,415	11,885	13,196	15,495	17,364	18,119
81337	9,300	0,500	0,000	1,717	3,448	5,199	6,965	8,708	10,362	11,851	13,181	15,521	17,385	18,120
83238	9,500	0,500	0,000	1,700	3,414	5,150	6,905	8,646	10,310	11,817	13,167	15,547	17,401	18,119
85141	9,700	0,500	0,000	1,684	3,382	5,103	6,847	8,587	10,260	11,784	13,153	15,573	17,415	18,116
87045	9,900	0,500	0,000	1,669	3,352	5,059	6,793	8,531	10,211	11,753	13,140	15,599	17,425	18,112
88952	10,100	0,500	0,000	1,655	3,324	5,018	6,743	8,478	10,164	11,722	13,127	15,624	17,432	18,105
90861	10,300	0,500	0,000	1,642	3,298	4,980	6,695	8,427	10,120	11,691	13,114	15,649	17,437	18,097

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
92772	10,500	0,500	0,000	1,630	3,274	4,944	6,650	8,380	10,076	11,661	13,102	15,672	17,439	18,088
94684	10,700	0,500	0,000	1,619	3,251	4,911	6,608	8,334	10,034	11,633	13,090	15,693	17,439	18,077
96599	10,900	0,500	0,000	1,609	3,231	4,880	6,569	8,292	9,995	11,604	13,079	15,712	17,437	18,064
98517	11,100	0,500	0,000	1,599	3,211	4,852	6,533	8,251	9,957	11,577	13,069	15,729	17,432	18,051
100438	11,300	0,500	0,000	1,590	3,194	4,825	6,499	8,214	9,920	11,550	13,058	15,742	17,425	18,036
102361	11,500	0,500	0,000	1,582	3,177	4,801	6,468	8,178	9,884	11,525	13,048	15,753	17,417	18,020
104286	11,700	0,500	0,000	1,574	3,162	4,779	6,439	8,144	9,850	11,500	13,039	15,762	17,408	18,004
106216	11,900	0,500	0,000	1,567	3,148	4,758	6,413	8,113	9,818	11,476	13,030	15,768	17,396	17,986
108149	12,100	0,500	0,000	1,561	3,136	4,739	6,389	8,084	9,788	11,453	13,021	15,771	17,383	17,968
110087	12,300	0,500	0,000	1,555	3,124	4,722	6,366	8,056	9,759	11,430	13,013	15,772	17,368	17,949
112029	12,500	0,500	0,000	1,550	3,114	4,707	6,346	8,030	9,731	11,409	13,005	15,771	17,352	17,929
113976	12,700	0,500	0,000	1,546	3,105	4,693	6,327	8,005	9,706	11,388	12,998	15,768	17,335	17,908
115928	12,900	0,500	0,000	1,542	3,096	4,680	6,310	7,983	9,682	11,369	12,991	15,763	17,316	17,885
117885	13,100	0,500	0,000	1,538	3,089	4,670	6,295	7,962	9,659	11,351	12,985	15,755	17,296	17,862
119847	13,300	0,500	0,000	1,535	3,083	4,660	6,281	7,943	9,638	11,333	12,979	15,746	17,276	17,839
121813	13,500	0,500	0,000	1,532	3,078	4,652	6,268	7,925	9,619	11,317	12,974	15,735	17,254	17,816
123785	13,700	0,500	0,000	1,530	3,073	4,645	6,256	7,909	9,600	11,302	12,969	15,722	17,231	17,792
125762	13,900	0,500	0,000	1,528	3,069	4,640	6,246	7,894	9,584	11,288	12,965	15,708	17,207	17,767
127744	14,100	0,500	0,000	1,527	3,067	4,635	6,238	7,881	9,568	11,275	12,961	15,692	17,182	17,742



Initial Trim = 1 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

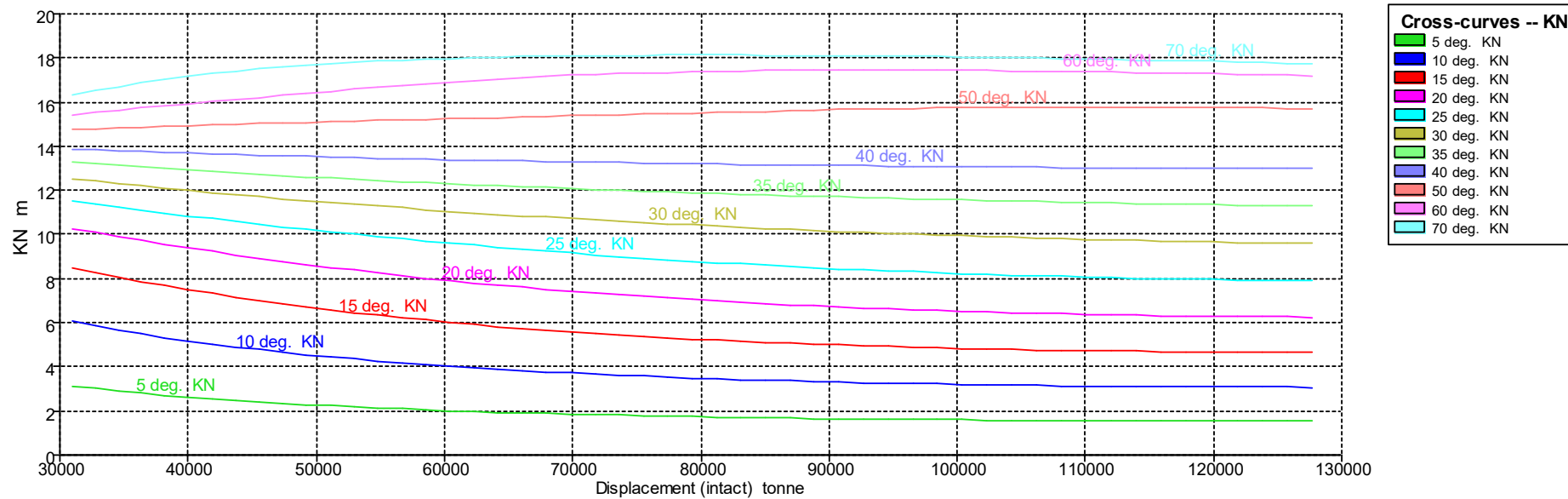
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
30950	3,900	1,000	0,000	3,143	6,078	8,511	10,259	11,544	12,525	13,286	13,884	14,760	15,412	16,315
32751	4,100	1,000	0,000	3,023	5,870	8,292	10,075	11,395	12,410	13,206	13,842	14,796	15,520	16,510
34558	4,300	1,000	0,000	2,913	5,678	8,082	9,896	11,250	12,299	13,130	13,801	14,831	15,627	16,699
36373	4,500	1,000	0,000	2,812	5,500	7,879	9,723	11,110	12,191	13,056	13,762	14,865	15,731	16,873
38195	4,700	1,000	0,000	2,718	5,335	7,685	9,555	10,973	12,087	12,984	13,725	14,898	15,832	17,028
40022	4,900	1,000	0,000	2,632	5,181	7,501	9,392	10,841	11,985	12,915	13,691	14,930	15,931	17,166
41856	5,100	1,000	0,000	2,553	5,037	7,326	9,234	10,713	11,887	12,849	13,658	14,960	16,027	17,288
43694	5,300	1,000	0,000	2,479	4,903	7,159	9,080	10,588	11,793	12,784	13,626	14,991	16,122	17,396
45537	5,500	1,000	0,000	2,411	4,778	7,002	8,931	10,468	11,701	12,722	13,596	15,021	16,215	17,496
47385	5,700	1,000	0,000	2,348	4,661	6,853	8,787	10,349	11,611	12,662	13,567	15,050	16,307	17,585
49237	5,900	1,000	0,000	2,289	4,552	6,713	8,647	10,234	11,524	12,604	13,539	15,079	16,397	17,663
51095	6,100	1,000	0,000	2,235	4,449	6,579	8,511	10,123	11,440	12,549	13,512	15,107	16,487	17,732
52956	6,300	1,000	0,000	2,184	4,353	6,453	8,381	10,014	11,358	12,496	13,486	15,134	16,574	17,792
54821	6,500	1,000	0,000	2,136	4,263	6,334	8,255	9,908	11,279	12,445	13,461	15,162	16,660	17,846
56689	6,700	1,000	0,000	2,092	4,178	6,221	8,134	9,804	11,202	12,395	13,438	15,189	16,745	17,894
58562	6,900	1,000	0,000	2,051	4,099	6,114	8,018	9,704	11,127	12,347	13,414	15,215	16,829	17,934
60437	7,100	1,000	0,000	2,012	4,024	6,013	7,907	9,606	11,054	12,301	13,392	15,242	16,909	17,973
62315	7,300	1,000	0,000	1,976	3,955	5,917	7,801	9,511	10,983	12,256	13,370	15,268	16,982	18,006
64196	7,500	1,000	0,000	1,942	3,889	5,826	7,699	9,419	10,914	12,212	13,349	15,294	17,049	18,034
66080	7,700	1,000	0,000	1,911	3,828	5,741	7,603	9,330	10,848	12,170	13,329	15,320	17,108	18,058
67967	7,900	1,000	0,000	1,881	3,770	5,660	7,510	9,244	10,783	12,128	13,309	15,346	17,162	18,078
69856	8,100	1,000	0,000	1,854	3,716	5,584	7,422	9,160	10,720	12,087	13,291	15,372	17,209	18,094
71747	8,300	1,000	0,000	1,828	3,665	5,512	7,339	9,080	10,659	12,048	13,273	15,397	17,250	18,107
73640	8,500	1,000	0,000	1,803	3,618	5,444	7,259	9,003	10,600	12,009	13,255	15,423	17,288	18,117
75535	8,700	1,000	0,000	1,781	3,573	5,380	7,184	8,929	10,542	11,972	13,240	15,449	17,321	18,125
77432	8,900	1,000	0,000	1,759	3,531	5,320	7,112	8,858	10,486	11,935	13,223	15,475	17,349	18,129
79332	9,100	1,000	0,000	1,740	3,492	5,264	7,044	8,790	10,431	11,899	13,208	15,501	17,373	18,132
81234	9,300	1,000	0,000	1,721	3,455	5,210	6,980	8,725	10,378	11,865	13,193	15,526	17,394	18,130
83138	9,500	1,000	0,000	1,704	3,421	5,160	6,919	8,663	10,327	11,831	13,178	15,552	17,411	18,129
85045	9,700	1,000	0,000	1,688	3,388	5,113	6,861	8,604	10,276	11,799	13,164	15,578	17,424	18,126
86954	9,900	1,000	0,000	1,672	3,358	5,069	6,807	8,548	10,227	11,767	13,151	15,604	17,434	18,121
88865	10,100	1,000	0,000	1,658	3,330	5,028	6,756	8,495	10,181	11,735	13,137	15,630	17,441	18,115
90778	10,300	1,000	0,000	1,645	3,304	4,990	6,708	8,444	10,136	11,705	13,125	15,655	17,446	18,107

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
92693	10,500	1,000	0,000	1,633	3,280	4,954	6,664	8,396	10,092	11,675	13,113	15,679	17,448	18,097
94610	10,700	1,000	0,000	1,622	3,257	4,920	6,622	8,351	10,051	11,646	13,101	15,701	17,447	18,086
96529	10,900	1,000	0,000	1,611	3,236	4,889	6,582	8,308	10,011	11,617	13,090	15,721	17,445	18,073
98451	11,100	1,000	0,000	1,602	3,217	4,861	6,546	8,267	9,972	11,590	13,079	15,738	17,440	18,059
100375	11,300	1,000	0,000	1,593	3,199	4,834	6,512	8,229	9,935	11,563	13,068	15,752	17,434	18,044
102302	11,500	1,000	0,000	1,585	3,183	4,810	6,481	8,194	9,899	11,537	13,058	15,763	17,425	18,028
104232	11,700	1,000	0,000	1,577	3,167	4,787	6,452	8,160	9,865	11,512	13,049	15,771	17,415	18,011
106166	11,900	1,000	0,000	1,570	3,154	4,767	6,426	8,128	9,832	11,488	13,040	15,777	17,404	17,994
108103	12,100	1,000	0,000	1,564	3,141	4,748	6,401	8,098	9,801	11,465	13,031	15,781	17,391	17,975
110045	12,300	1,000	0,000	1,558	3,130	4,731	6,379	8,069	9,772	11,442	13,023	15,782	17,376	17,956
111992	12,500	1,000	0,000	1,553	3,119	4,715	6,358	8,043	9,745	11,421	13,015	15,781	17,360	17,935
113944	12,700	1,000	0,000	1,548	3,110	4,702	6,339	8,018	9,719	11,400	13,008	15,778	17,343	17,914
115900	12,900	1,000	0,000	1,544	3,102	4,689	6,322	7,996	9,694	11,381	13,001	15,773	17,324	17,892
117861	13,100	1,000	0,000	1,541	3,095	4,679	6,306	7,974	9,672	11,362	12,995	15,765	17,304	17,868
119828	13,300	1,000	0,000	1,537	3,089	4,669	6,292	7,955	9,650	11,345	12,989	15,756	17,283	17,845
121799	13,500	1,000	0,000	1,535	3,083	4,661	6,279	7,937	9,630	11,328	12,983	15,745	17,261	17,821
123775	13,700	1,000	0,000	1,533	3,079	4,655	6,267	7,920	9,612	11,313	12,978	15,732	17,238	17,797
125757	13,900	1,000	0,000	1,531	3,075	4,649	6,257	7,905	9,595	11,299	12,974	15,718	17,214	17,772
127744	14,100	1,000	0,000	1,530	3,073	4,644	6,248	7,892	9,579	11,285	12,970	15,702	17,189	17,746



Initial Trim = 1,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

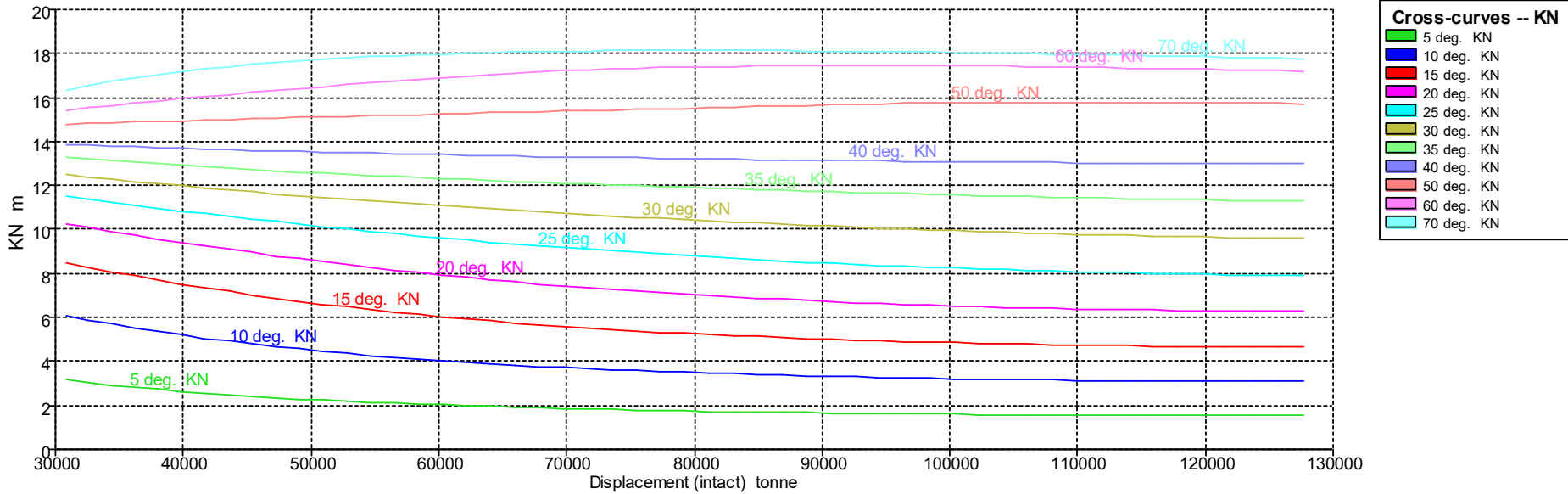
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
30807	3,900	1,500	0,000	3,154	6,093	8,515	10,254	11,534	12,512	13,274	13,876	14,775	15,439	16,346
32605	4,100	1,500	0,000	3,034	5,885	8,299	10,073	11,388	12,401	13,197	13,835	14,811	15,545	16,534
34413	4,300	1,500	0,000	2,923	5,693	8,091	9,897	11,246	12,292	13,123	13,798	14,846	15,650	16,716
36227	4,500	1,500	0,000	2,822	5,515	7,891	9,726	11,108	12,187	13,051	13,761	14,879	15,751	16,886
38049	4,700	1,500	0,000	2,729	5,350	7,699	9,560	10,974	12,084	12,982	13,727	14,911	15,850	17,040
39876	4,900	1,500	0,000	2,642	5,196	7,515	9,399	10,843	11,985	12,914	13,694	14,942	15,947	17,178
41710	5,100	1,500	0,000	2,562	5,052	7,341	9,242	10,717	11,889	12,850	13,663	14,973	16,042	17,301
43549	5,300	1,500	0,000	2,488	4,918	7,175	9,090	10,593	11,795	12,787	13,633	15,003	16,135	17,410
45393	5,500	1,500	0,000	2,420	4,793	7,018	8,942	10,474	11,705	12,726	13,604	15,032	16,228	17,506
47242	5,700	1,500	0,000	2,356	4,675	6,869	8,798	10,357	11,617	12,668	13,576	15,061	16,318	17,596
49096	5,900	1,500	0,000	2,297	4,565	6,728	8,660	10,243	11,531	12,612	13,549	15,089	16,408	17,675
50954	6,100	1,500	0,000	2,242	4,462	6,595	8,525	10,132	11,448	12,558	13,522	15,116	16,495	17,744
52817	6,300	1,500	0,000	2,191	4,366	6,468	8,395	10,024	11,367	12,506	13,497	15,144	16,582	17,806
54683	6,500	1,500	0,000	2,143	4,275	6,349	8,269	9,919	11,288	12,456	13,472	15,171	16,667	17,859
56554	6,700	1,500	0,000	2,098	4,190	6,236	8,149	9,816	11,212	12,407	13,449	15,197	16,751	17,906
58427	6,900	1,500	0,000	2,057	4,111	6,129	8,033	9,716	11,138	12,360	13,426	15,224	16,835	17,948
60304	7,100	1,500	0,000	2,018	4,036	6,028	7,922	9,619	11,066	12,314	13,403	15,250	16,916	17,983
62185	7,300	1,500	0,000	1,982	3,966	5,932	7,816	9,525	10,996	12,269	13,382	15,276	16,990	18,016
64068	7,500	1,500	0,000	1,948	3,900	5,841	7,715	9,434	10,928	12,226	13,361	15,302	17,056	18,045
65954	7,700	1,500	0,000	1,916	3,838	5,755	7,618	9,345	10,862	12,183	13,341	15,327	17,116	18,069
67843	7,900	1,500	0,000	1,886	3,780	5,674	7,526	9,259	10,798	12,142	13,321	15,353	17,170	18,089
69735	8,100	1,500	0,000	1,858	3,725	5,597	7,438	9,176	10,736	12,101	13,303	15,379	17,217	18,106
71629	8,300	1,500	0,000	1,832	3,674	5,525	7,354	9,096	10,675	12,062	13,286	15,404	17,260	18,119
73525	8,500	1,500	0,000	1,808	3,626	5,457	7,275	9,019	10,616	12,023	13,268	15,430	17,296	18,128
75424	8,700	1,500	0,000	1,785	3,581	5,393	7,199	8,945	10,559	11,986	13,252	15,455	17,329	18,135
77324	8,900	1,500	0,000	1,763	3,539	5,332	7,127	8,874	10,503	11,950	13,235	15,481	17,357	18,139
79227	9,100	1,500	0,000	1,744	3,500	5,276	7,059	8,807	10,448	11,914	13,220	15,507	17,382	18,141
81132	9,300	1,500	0,000	1,725	3,463	5,222	6,995	8,742	10,395	11,880	13,204	15,532	17,402	18,142
83040	9,500	1,500	0,000	1,707	3,428	5,172	6,934	8,680	10,343	11,846	13,190	15,558	17,419	18,137
84950	9,700	1,500	0,000	1,691	3,396	5,125	6,876	8,622	10,293	11,813	13,176	15,583	17,432	18,135
86863	9,900	1,500	0,000	1,676	3,365	5,080	6,822	8,565	10,245	11,781	13,162	15,609	17,443	18,130
88778	10,100	1,500	0,000	1,662	3,337	5,039	6,771	8,512	10,198	11,749	13,149	15,635	17,449	18,124
90696	10,300	1,500	0,000	1,649	3,311	5,000	6,723	8,461	10,152	11,718	13,136	15,661	17,454	18,116

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
92615	10,500	1,500	0,000	1,636	3,286	4,964	6,678	8,413	10,110	11,688	13,124	15,686	17,456	18,106
94537	10,700	1,500	0,000	1,625	3,264	4,930	6,636	8,368	10,068	11,659	13,112	15,709	17,455	18,094
96461	10,900	1,500	0,000	1,614	3,243	4,899	6,597	8,325	10,027	11,631	13,100	15,729	17,452	18,081
98387	11,100	1,500	0,000	1,605	3,223	4,870	6,560	8,284	9,988	11,603	13,089	15,746	17,448	18,067
100315	11,300	1,500	0,000	1,596	3,205	4,844	6,526	8,246	9,950	11,576	13,079	15,760	17,441	18,051
102246	11,500	1,500	0,000	1,587	3,189	4,819	6,495	8,210	9,914	11,550	13,069	15,772	17,433	18,035
104182	11,700	1,500	0,000	1,580	3,173	4,797	6,466	8,175	9,880	11,525	13,059	15,781	17,422	18,018
106120	11,900	1,500	0,000	1,573	3,159	4,776	6,440	8,143	9,847	11,501	13,050	15,787	17,411	18,001
108063	12,100	1,500	0,000	1,566	3,147	4,757	6,415	8,112	9,816	11,478	13,041	15,790	17,398	17,982
110010	12,300	1,500	0,000	1,561	3,136	4,740	6,392	8,084	9,786	11,455	13,033	15,791	17,383	17,962
111961	12,500	1,500	0,000	1,556	3,125	4,725	6,371	8,057	9,758	11,433	13,025	15,790	17,367	17,941
113917	12,700	1,500	0,000	1,551	3,116	4,711	6,352	8,032	9,732	11,413	13,018	15,787	17,350	17,920
115878	12,900	1,500	0,000	1,547	3,108	4,699	6,334	8,009	9,707	11,393	13,011	15,782	17,331	17,897
117844	13,100	1,500	0,000	1,543	3,101	4,688	6,318	7,987	9,684	11,374	13,005	15,774	17,311	17,874
119815	13,300	1,500	0,000	1,540	3,095	4,679	6,303	7,967	9,663	11,357	12,999	15,765	17,290	17,849
121791	13,500	1,500	0,000	1,538	3,090	4,671	6,290	7,949	9,643	11,340	12,993	15,754	17,268	17,825
123772	13,700	1,500	0,000	1,536	3,085	4,664	6,278	7,932	9,624	11,324	12,988	15,741	17,244	17,801
125758	13,900	1,500	0,000	1,534	3,082	4,658	6,268	7,917	9,607	11,310	12,983	15,727	17,220	17,776
127750	14,100	1,500	0,000	1,533	3,079	4,654	6,258	7,904	9,591	11,296	12,979	15,710	17,195	17,751



Initial Trim = 2 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

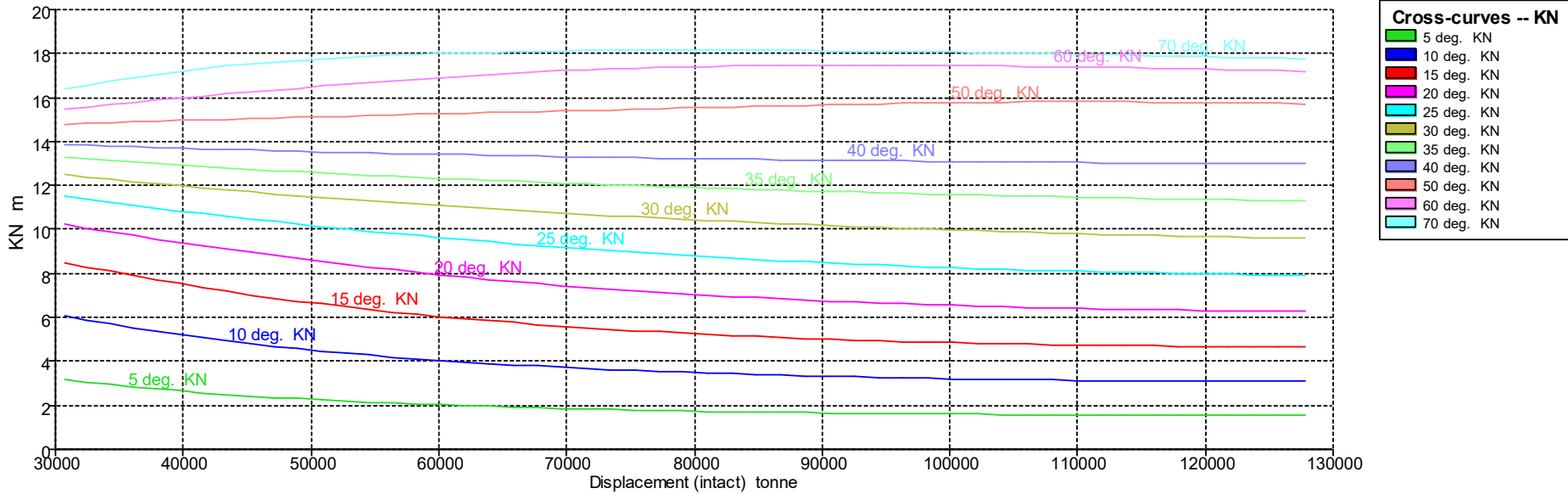
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
30670	3,900	2,000	0,000	3,164	6,104	8,513	10,244	11,519	12,495	13,258	13,866	14,792	15,471	16,383
32467	4,100	2,000	0,000	3,044	5,898	8,301	10,066	11,376	12,387	13,185	13,829	14,827	15,575	16,564
34272	4,300	2,000	0,000	2,933	5,706	8,096	9,893	11,238	12,282	13,114	13,793	14,860	15,676	16,737
36086	4,500	2,000	0,000	2,832	5,528	7,899	9,725	11,102	12,179	13,044	13,760	14,893	15,774	16,901
37907	4,700	2,000	0,000	2,738	5,363	7,709	9,562	10,971	12,080	12,977	13,728	14,925	15,870	17,053
39735	4,900	2,000	0,000	2,651	5,209	7,527	9,402	10,843	11,983	12,912	13,698	14,956	15,965	17,190
41568	5,100	2,000	0,000	2,571	5,066	7,353	9,247	10,718	11,888	12,850	13,668	14,986	16,059	17,313
43407	5,300	2,000	0,000	2,497	4,932	7,189	9,097	10,596	11,796	12,789	13,639	15,015	16,152	17,422
45252	5,500	2,000	0,000	2,428	4,806	7,032	8,950	10,478	11,707	12,730	13,612	15,044	16,243	17,519
47103	5,700	2,000	0,000	2,364	4,689	6,883	8,808	10,363	11,621	12,674	13,584	15,072	16,332	17,605
48958	5,900	2,000	0,000	2,304	4,579	6,742	8,670	10,250	11,537	12,619	13,558	15,099	16,420	17,685
50817	6,100	2,000	0,000	2,249	4,475	6,609	8,537	10,140	11,455	12,567	13,532	15,127	16,506	17,755
52681	6,300	2,000	0,000	2,198	4,378	6,483	8,408	10,033	11,375	12,516	13,508	15,154	16,592	17,817
54549	6,500	2,000	0,000	2,150	4,288	6,364	8,283	9,928	11,298	12,467	13,483	15,180	16,676	17,871
56420	6,700	2,000	0,000	2,105	4,202	6,251	8,163	9,827	11,222	12,419	13,460	15,207	16,760	17,918
58296	6,900	2,000	0,000	2,063	4,122	6,144	8,048	9,728	11,149	12,372	13,437	15,233	16,842	17,959
60174	7,100	2,000	0,000	2,024	4,047	6,042	7,937	9,632	11,078	12,327	13,415	15,258	16,922	17,996
62057	7,300	2,000	0,000	1,987	3,977	5,946	7,831	9,538	11,009	12,283	13,393	15,284	16,996	18,025
63942	7,500	2,000	0,000	1,953	3,910	5,855	7,730	9,448	10,942	12,240	13,373	15,310	17,063	18,055
65830	7,700	2,000	0,000	1,921	3,848	5,769	7,633	9,360	10,877	12,197	13,353	15,335	17,123	18,079
67722	7,900	2,000	0,000	1,891	3,790	5,688	7,541	9,274	10,814	12,156	13,334	15,361	17,177	18,099
69616	8,100	2,000	0,000	1,863	3,735	5,611	7,453	9,192	10,752	12,116	13,316	15,386	17,225	18,116
71513	8,300	2,000	0,000	1,837	3,684	5,539	7,370	9,112	10,691	12,076	13,298	15,412	17,267	18,129
73412	8,500	2,000	0,000	1,812	3,635	5,470	7,290	9,036	10,633	12,038	13,281	15,437	17,305	18,138
75314	8,700	2,000	0,000	1,789	3,590	5,406	7,215	8,962	10,575	12,001	13,264	15,463	17,336	18,144
77218	8,900	2,000	0,000	1,768	3,548	5,345	7,143	8,892	10,520	11,964	13,248	15,488	17,364	18,148
79124	9,100	2,000	0,000	1,748	3,508	5,288	7,075	8,824	10,465	11,930	13,232	15,513	17,389	18,150
81033	9,300	2,000	0,000	1,729	3,471	5,234	7,010	8,760	10,412	11,895	13,217	15,539	17,409	18,150
82944	9,500	2,000	0,000	1,711	3,436	5,184	6,949	8,698	10,360	11,861	13,202	15,565	17,426	18,149
84858	9,700	2,000	0,000	1,695	3,403	5,136	6,891	8,640	10,311	11,828	13,187	15,590	17,440	18,143
86774	9,900	2,000	0,000	1,680	3,373	5,092	6,837	8,584	10,262	11,795	13,174	15,616	17,450	18,138
88694	10,100	2,000	0,000	1,665	3,344	5,050	6,786	8,530	10,215	11,763	13,160	15,642	17,457	18,132
90615	10,300	2,000	0,000	1,652	3,318	5,011	6,738	8,480	10,171	11,732	13,147	15,668	17,461	18,123

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
92539	10,500	2,000	0,000	1,640	3,293	4,975	6,693	8,432	10,127	11,702	13,135	15,693	17,463	18,113
94466	10,700	2,000	0,000	1,628	3,270	4,941	6,651	8,386	10,084	11,673	13,123	15,717	17,462	18,101
96394	10,900	2,000	0,000	1,618	3,249	4,910	6,612	8,342	10,043	11,644	13,111	15,737	17,459	18,088
98324	11,100	2,000	0,000	1,608	3,230	4,881	6,575	8,302	10,004	11,617	13,100	15,755	17,455	18,074
100258	11,300	2,000	0,000	1,599	3,212	4,854	6,541	8,263	9,966	11,590	13,090	15,769	17,448	18,059
102194	11,500	2,000	0,000	1,590	3,195	4,829	6,510	8,226	9,930	11,564	13,079	15,780	17,440	18,042
104135	11,700	2,000	0,000	1,583	3,180	4,807	6,481	8,191	9,895	11,539	13,070	15,789	17,430	18,025
106079	11,900	2,000	0,000	1,576	3,166	4,786	6,454	8,158	9,862	11,514	13,060	15,795	17,417	18,007
108027	12,100	2,000	0,000	1,570	3,153	4,767	6,429	8,127	9,831	11,491	13,052	15,799	17,404	17,987
109979	12,300	2,000	0,000	1,564	3,142	4,750	6,406	8,098	9,801	11,468	13,043	15,800	17,390	17,967
111935	12,500	2,000	0,000	1,559	3,132	4,735	6,385	8,071	9,773	11,446	13,036	15,799	17,374	17,946
113896	12,700	2,000	0,000	1,554	3,123	4,722	6,365	8,046	9,746	11,426	13,028	15,796	17,356	17,925
115861	12,900	2,000	0,000	1,550	3,114	4,710	6,347	8,022	9,721	11,406	13,021	15,790	17,338	17,902
117832	13,100	2,000	0,000	1,547	3,107	4,699	6,331	8,001	9,698	11,387	13,015	15,783	17,317	17,879
119808	13,300	2,000	0,000	1,544	3,101	4,690	6,316	7,981	9,676	11,369	13,009	15,774	17,296	17,855
121788	13,500	2,000	0,000	1,541	3,096	4,682	6,302	7,962	9,656	11,352	13,003	15,763	17,274	17,830
123774	13,700	2,000	0,000	1,539	3,092	4,675	6,290	7,945	9,637	11,336	12,998	15,750	17,250	17,805
125765	13,900	2,000	0,000	1,537	3,089	4,668	6,279	7,930	9,619	11,321	12,994	15,735	17,226	17,780
127762	14,100	2,000	0,000	1,536	3,086	4,663	6,270	7,916	9,603	11,308	12,990	15,719	17,200	17,754



Initial Trim = 2,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

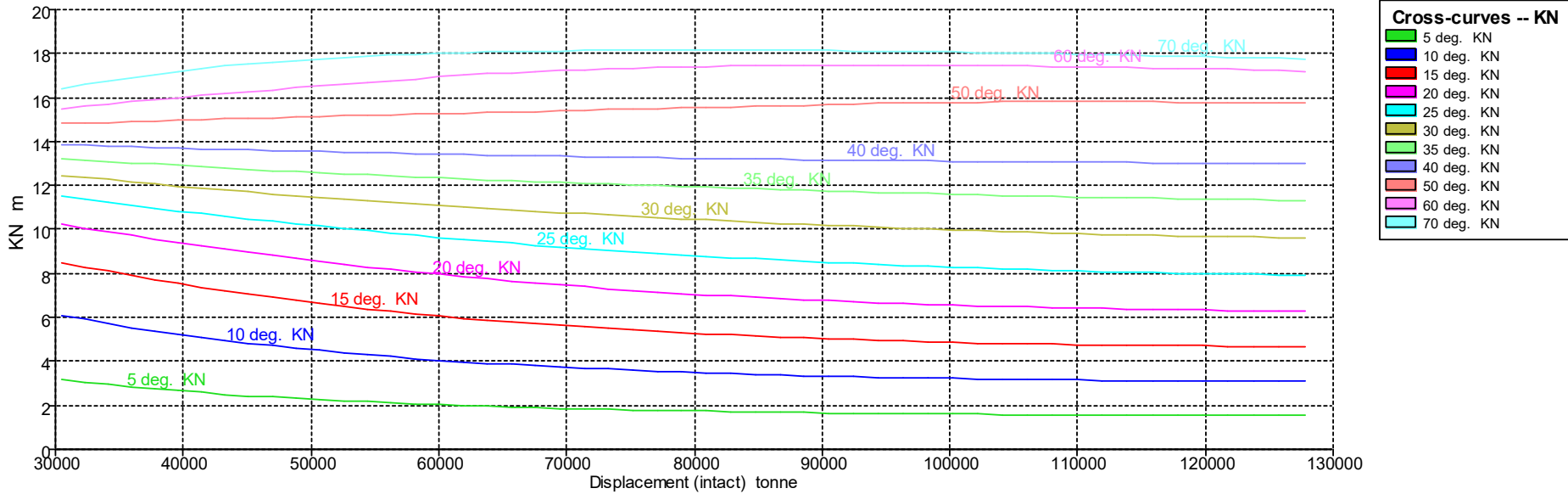
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
30540	3,900	2,500	0,000	3,172	6,112	8,506	10,227	11,498	12,473	13,239	13,855	14,808	15,507	16,425
32334	4,100	2,500	0,000	3,052	5,907	8,298	10,054	11,360	12,369	13,169	13,821	14,842	15,606	16,598
34138	4,300	2,500	0,000	2,942	5,717	8,097	9,885	11,225	12,268	13,102	13,789	14,876	15,704	16,763
35950	4,500	2,500	0,000	2,840	5,540	7,903	9,720	11,093	12,169	13,036	13,758	14,908	15,800	16,919
37770	4,700	2,500	0,000	2,747	5,375	7,716	9,559	10,965	12,072	12,972	13,729	14,939	15,894	17,067
39598	4,900	2,500	0,000	2,660	5,222	7,537	9,403	10,839	11,978	12,909	13,701	14,969	15,988	17,202
41431	5,100	2,500	0,000	2,580	5,078	7,365	9,250	10,717	11,885	12,849	13,673	14,999	16,080	17,324
43271	5,300	2,500	0,000	2,505	4,944	7,200	9,101	10,597	11,796	12,790	13,646	15,027	16,171	17,433
45116	5,500	2,500	0,000	2,436	4,819	7,044	8,957	10,480	11,708	12,734	13,619	15,056	16,260	17,530
46967	5,700	2,500	0,000	2,372	4,702	6,896	8,816	10,367	11,624	12,679	13,593	15,083	16,348	17,616
48823	5,900	2,500	0,000	2,312	4,591	6,756	8,679	10,255	11,542	12,627	13,568	15,110	16,434	17,693
50684	6,100	2,500	0,000	2,256	4,488	6,623	8,547	10,147	11,461	12,576	13,543	15,137	16,519	17,765
52548	6,300	2,500	0,000	2,205	4,391	6,497	8,419	10,041	11,383	12,526	13,518	15,164	16,603	17,827
54417	6,500	2,500	0,000	2,156	4,300	6,378	8,296	9,938	11,306	12,478	13,495	15,190	16,687	17,881
56290	6,700	2,500	0,000	2,111	4,215	6,265	8,176	9,837	11,232	12,431	13,471	15,216	16,770	17,929
58167	6,900	2,500	0,000	2,069	4,134	6,158	8,062	9,739	11,160	12,385	13,449	15,242	16,851	17,970
60047	7,100	2,500	0,000	2,030	4,059	6,057	7,951	9,644	11,090	12,340	13,427	15,268	16,929	18,005
61931	7,300	2,500	0,000	1,993	3,988	5,961	7,846	9,551	11,022	12,296	13,406	15,293	17,002	18,037
63818	7,500	2,500	0,000	1,959	3,921	5,870	7,745	9,461	10,956	12,253	13,385	15,319	17,069	18,063
65709	7,700	2,500	0,000	1,927	3,859	5,784	7,648	9,374	10,892	12,211	13,365	15,344	17,129	18,088
67602	7,900	2,500	0,000	1,897	3,800	5,702	7,556	9,290	10,829	12,170	13,347	15,369	17,183	18,108
69499	8,100	2,500	0,000	1,868	3,745	5,625	7,469	9,208	10,768	12,130	13,329	15,395	17,231	18,125
71398	8,300	2,500	0,000	1,842	3,693	5,553	7,385	9,129	10,708	12,091	13,311	15,420	17,273	18,137
73301	8,500	2,500	0,000	1,817	3,645	5,484	7,306	9,053	10,649	12,053	13,293	15,445	17,311	18,147
75206	8,700	2,500	0,000	1,794	3,599	5,419	7,231	8,980	10,592	12,016	13,276	15,470	17,343	18,153
77113	8,900	2,500	0,000	1,772	3,557	5,358	7,159	8,910	10,536	11,980	13,260	15,496	17,371	18,157
79023	9,100	2,500	0,000	1,752	3,517	5,301	7,091	8,842	10,482	11,945	13,244	15,521	17,395	18,159
80936	9,300	2,500	0,000	1,733	3,479	5,247	7,026	8,778	10,430	11,910	13,229	15,546	17,416	18,159
82850	9,500	2,500	0,000	1,715	3,444	5,196	6,965	8,717	10,378	11,876	13,214	15,572	17,433	18,157
84768	9,700	2,500	0,000	1,699	3,411	5,149	6,908	8,658	10,328	11,842	13,200	15,598	17,446	18,153
86688	9,900	2,500	0,000	1,683	3,381	5,104	6,853	8,602	10,281	11,810	13,186	15,623	17,456	18,145
88611	10,100	2,500	0,000	1,669	3,352	5,062	6,802	8,549	10,234	11,778	13,172	15,649	17,464	18,138
90537	10,300	2,500	0,000	1,656	3,326	5,023	6,754	8,499	10,188	11,747	13,159	15,675	17,468	18,130

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
92465	10,500	2,500	0,000	1,643	3,301	4,987	6,709	8,450	10,144	11,717	13,146	15,701	17,469	18,119
94395	10,700	2,500	0,000	1,632	3,278	4,953	6,667	8,404	10,101	11,687	13,134	15,724	17,469	18,108
96328	10,900	2,500	0,000	1,621	3,256	4,921	6,628	8,362	10,060	11,659	13,123	15,745	17,466	18,095
98265	11,100	2,500	0,000	1,611	3,237	4,892	6,591	8,320	10,020	11,631	13,112	15,762	17,461	18,080
100204	11,300	2,500	0,000	1,602	3,219	4,865	6,557	8,280	9,982	11,604	13,101	15,777	17,454	18,065
102146	11,500	2,500	0,000	1,594	3,202	4,841	6,526	8,243	9,946	11,578	13,091	15,788	17,446	18,049
104092	11,700	2,500	0,000	1,586	3,187	4,818	6,496	8,208	9,911	11,552	13,081	15,797	17,436	18,031
106042	11,900	2,500	0,000	1,579	3,173	4,797	6,469	8,175	9,878	11,528	13,072	15,803	17,424	18,012
107995	12,100	2,500	0,000	1,573	3,160	4,778	6,444	8,143	9,846	11,504	13,063	15,807	17,410	17,992
109953	12,300	2,500	0,000	1,567	3,149	4,761	6,420	8,114	9,816	11,482	13,054	15,808	17,396	17,972
111915	12,500	2,500	0,000	1,562	3,139	4,746	6,398	8,086	9,788	11,460	13,047	15,807	17,380	17,951
113881	12,700	2,500	0,000	1,558	3,129	4,733	6,379	8,061	9,761	11,439	13,039	15,804	17,362	17,929
115851	12,900	2,500	0,000	1,554	3,121	4,721	6,360	8,037	9,736	11,419	13,032	15,798	17,343	17,906
117826	13,100	2,500	0,000	1,550	3,114	4,710	6,344	8,015	9,712	11,400	13,026	15,791	17,323	17,883
119807	13,300	2,500	0,000	1,547	3,108	4,701	6,328	7,994	9,690	11,382	13,020	15,782	17,302	17,859
121792	13,500	2,500	0,000	1,545	3,103	4,692	6,314	7,975	9,669	11,365	13,014	15,771	17,279	17,835
123783	13,700	2,500	0,000	1,543	3,099	4,685	6,302	7,958	9,650	11,349	13,009	15,758	17,256	17,809
125779	13,900	2,500	0,000	1,541	3,096	4,679	6,291	7,942	9,632	11,334	13,004	15,743	17,231	17,783
127780	14,100	2,500	0,000	1,540	3,094	4,674	6,281	7,928	9,616	11,320	13,000	15,726	17,205	17,758



Initial Trim = 3 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

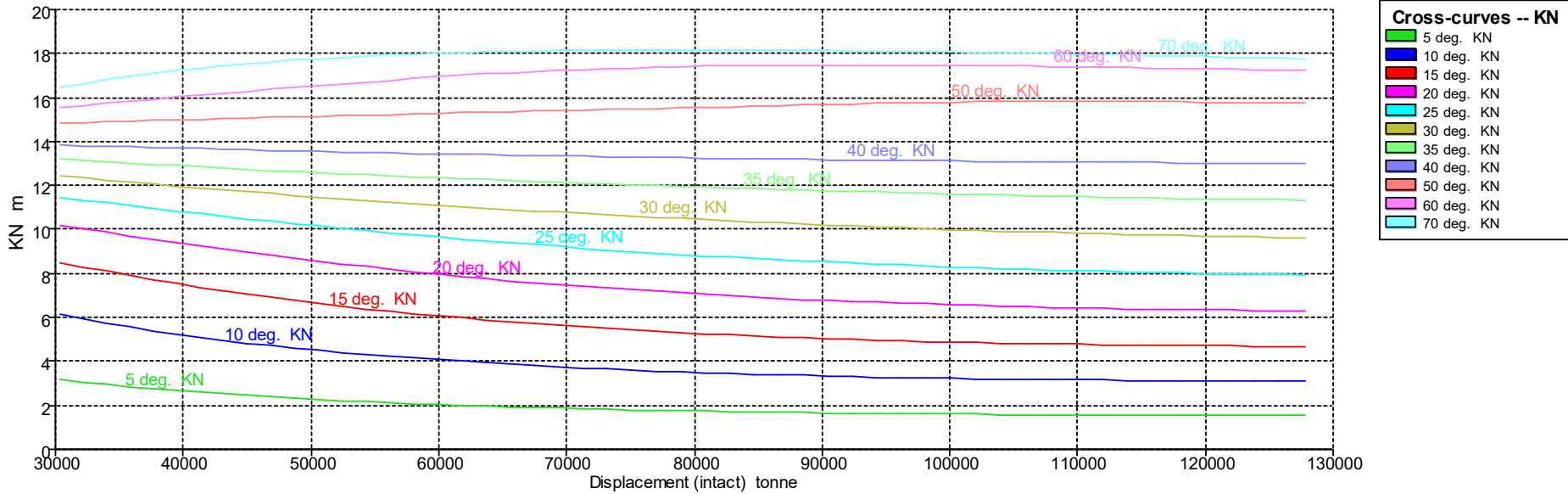
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
30417	3,900	3,000	0,000	3,178	6,116	8,492	10,204	11,472	12,447	13,217	13,842	14,825	15,546	16,473
32209	4,100	3,000	0,000	3,059	5,914	8,290	10,037	11,339	12,348	13,152	13,813	14,859	15,641	16,636
34011	4,300	3,000	0,000	2,949	5,725	8,093	9,872	11,209	12,251	13,088	13,784	14,892	15,735	16,792
35821	4,500	3,000	0,000	2,848	5,550	7,903	9,711	11,080	12,155	13,025	13,757	14,923	15,829	16,942
37639	4,700	3,000	0,000	2,754	5,386	7,720	9,553	10,955	12,062	12,964	13,730	14,954	15,922	17,082
39465	4,900	3,000	0,000	2,668	5,232	7,543	9,400	10,833	11,971	12,905	13,704	14,983	16,013	17,214
41299	5,100	3,000	0,000	2,588	5,090	7,373	9,250	10,713	11,881	12,847	13,678	15,012	16,103	17,334
43139	5,300	3,000	0,000	2,513	4,956	7,210	9,103	10,596	11,794	12,791	13,652	15,040	16,192	17,443
44985	5,500	3,000	0,000	2,444	4,831	7,055	8,961	10,481	11,709	12,737	13,626	15,068	16,279	17,540
46836	5,700	3,000	0,000	2,380	4,714	6,908	8,822	10,369	11,626	12,685	13,602	15,095	16,365	17,627
48692	5,900	3,000	0,000	2,320	4,604	6,768	8,687	10,259	11,545	12,634	13,577	15,122	16,450	17,704
50554	6,100	3,000	0,000	2,264	4,500	6,636	8,556	10,152	11,466	12,585	13,553	15,149	16,535	17,772
52419	6,300	3,000	0,000	2,212	4,403	6,510	8,430	10,047	11,390	12,536	13,529	15,175	16,618	17,835
54289	6,500	3,000	0,000	2,163	4,312	6,391	8,307	9,946	11,315	12,489	13,505	15,201	16,701	17,890
56163	6,700	3,000	0,000	2,118	4,226	6,279	8,189	9,846	11,242	12,442	13,483	15,227	16,782	17,938
58041	6,900	3,000	0,000	2,076	4,146	6,172	8,075	9,750	11,171	12,397	13,461	15,252	16,860	17,979
59923	7,100	3,000	0,000	2,036	4,070	6,071	7,965	9,656	11,103	12,353	13,439	15,278	16,936	18,015
61808	7,300	3,000	0,000	1,999	3,999	5,975	7,860	9,564	11,036	12,309	13,418	15,303	17,008	18,046
63697	7,500	3,000	0,000	1,965	3,932	5,884	7,760	9,475	10,971	12,267	13,398	15,328	17,074	18,073
65590	7,700	3,000	0,000	1,932	3,870	5,798	7,664	9,389	10,907	12,225	13,379	15,353	17,134	18,095
67485	7,900	3,000	0,000	1,902	3,811	5,717	7,572	9,305	10,845	12,184	13,360	15,378	17,188	18,115
69384	8,100	3,000	0,000	1,874	3,755	5,640	7,485	9,224	10,784	12,145	13,342	15,404	17,236	18,132
71286	8,300	3,000	0,000	1,847	3,704	5,567	7,401	9,146	10,724	12,106	13,324	15,429	17,279	18,144
73191	8,500	3,000	0,000	1,822	3,655	5,498	7,322	9,070	10,666	12,068	13,306	15,454	17,316	18,154
75099	8,700	3,000	0,000	1,799	3,609	5,433	7,247	8,998	10,609	12,032	13,289	15,479	17,349	18,161
77010	8,900	3,000	0,000	1,777	3,566	5,372	7,176	8,928	10,553	11,995	13,273	15,504	17,377	18,165
78924	9,100	3,000	0,000	1,757	3,526	5,314	7,108	8,861	10,500	11,960	13,257	15,529	17,400	18,166
80840	9,300	3,000	0,000	1,738	3,488	5,260	7,043	8,797	10,448	11,925	13,241	15,555	17,421	18,166
82759	9,500	3,000	0,000	1,720	3,453	5,209	6,982	8,736	10,396	11,891	13,226	15,580	17,438	18,164
84680	9,700	3,000	0,000	1,703	3,420	5,161	6,925	8,678	10,348	11,857	13,212	15,606	17,451	18,160
86604	9,900	3,000	0,000	1,688	3,389	5,117	6,870	8,622	10,299	11,825	13,198	15,631	17,462	18,154
88531	10,100	3,000	0,000	1,673	3,360	5,075	6,819	8,569	10,252	11,793	13,184	15,657	17,469	18,144
90460	10,300	3,000	0,000	1,660	3,334	5,035	6,771	8,518	10,206	11,762	13,171	15,683	17,474	18,135

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
92392	10,500	3,000	0,000	1,647	3,309	4,999	6,726	8,471	10,161	11,731	13,158	15,708	17,475	18,125
94327	10,700	3,000	0,000	1,636	3,286	4,965	6,684	8,424	10,118	11,702	13,146	15,732	17,474	18,113
96266	10,900	3,000	0,000	1,625	3,264	4,933	6,645	8,380	10,077	11,673	13,135	15,752	17,472	18,100
98208	11,100	3,000	0,000	1,615	3,244	4,904	6,608	8,338	10,037	11,645	13,123	15,770	17,467	18,086
100153	11,300	3,000	0,000	1,606	3,226	4,877	6,574	8,298	9,999	11,618	13,113	15,784	17,460	18,071
102102	11,500	3,000	0,000	1,597	3,209	4,852	6,542	8,261	9,962	11,592	13,102	15,796	17,451	18,054
104054	11,700	3,000	0,000	1,590	3,194	4,830	6,512	8,225	9,927	11,567	13,092	15,805	17,441	18,036
106009	11,900	3,000	0,000	1,583	3,180	4,809	6,485	8,191	9,894	11,542	13,083	15,811	17,429	18,017
107968	12,100	3,000	0,000	1,576	3,167	4,790	6,459	8,160	9,862	11,518	13,074	15,814	17,416	17,997
109932	12,300	3,000	0,000	1,571	3,156	4,773	6,435	8,130	9,832	11,495	13,066	15,816	17,401	17,976
111899	12,500	3,000	0,000	1,566	3,146	4,758	6,413	8,102	9,803	11,473	13,058	15,815	17,385	17,955
113870	12,700	3,000	0,000	1,561	3,137	4,745	6,393	8,076	9,776	11,452	13,051	15,811	17,367	17,933
115846	12,900	3,000	0,000	1,557	3,129	4,733	6,374	8,052	9,751	11,432	13,043	15,806	17,348	17,910
117827	13,100	3,000	0,000	1,554	3,122	4,722	6,357	8,029	9,727	11,413	13,037	15,798	17,328	17,887
119812	13,300	3,000	0,000	1,551	3,116	4,712	6,341	8,009	9,704	11,395	13,031	15,789	17,307	17,863
121802	13,500	3,000	0,000	1,548	3,111	4,704	6,327	7,989	9,683	11,378	13,025	15,778	17,284	17,838
123798	13,700	3,000	0,000	1,546	3,107	4,696	6,315	7,972	9,664	11,362	13,020	15,765	17,260	17,813
125798	13,900	3,000	0,000	1,545	3,104	4,690	6,303	7,956	9,646	11,347	13,016	15,750	17,236	17,786
127804	14,100	3,000	0,000	1,544	3,101	4,684	6,293	7,941	9,630	11,333	13,012	15,733	17,210	17,760



Initial Trim = 3,5 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

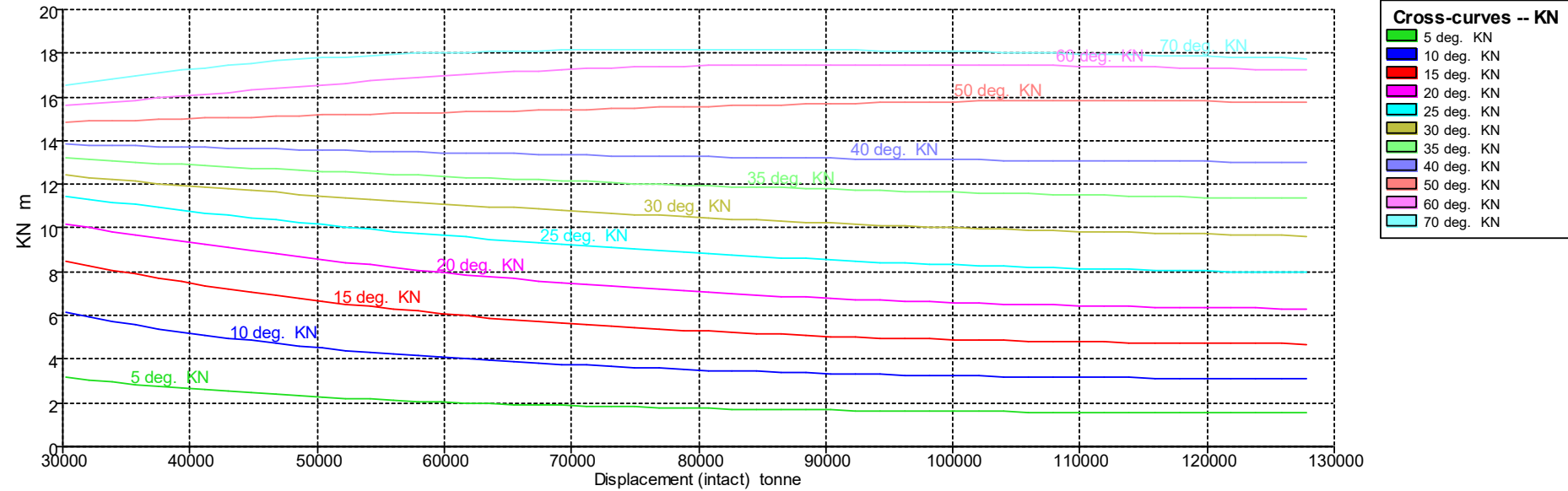
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
30302	3,900	3,500	0,000	3,182	6,116	8,472	10,175	11,440	12,417	13,192	13,830	14,844	15,588	16,524
32091	4,100	3,500	0,000	3,064	5,917	8,276	10,013	11,313	12,323	13,131	13,805	14,877	15,680	16,677
33890	4,300	3,500	0,000	2,955	5,731	8,085	9,854	11,188	12,230	13,072	13,780	14,908	15,772	16,825
35698	4,500	3,500	0,000	2,854	5,557	7,899	9,697	11,064	12,139	13,013	13,756	14,939	15,862	16,966
37515	4,700	3,500	0,000	2,761	5,394	7,720	9,543	10,943	12,049	12,955	13,731	14,969	15,952	17,101
39340	4,900	3,500	0,000	2,675	5,242	7,546	9,393	10,823	11,961	12,899	13,706	14,998	16,041	17,227
41173	5,100	3,500	0,000	2,595	5,100	7,379	9,246	10,706	11,875	12,845	13,682	15,026	16,128	17,345
43012	5,300	3,500	0,000	2,521	4,967	7,218	9,102	10,591	11,790	12,792	13,657	15,054	16,215	17,452
44858	5,500	3,500	0,000	2,451	4,842	7,065	8,962	10,479	11,708	12,741	13,634	15,081	16,300	17,549
46709	5,700	3,500	0,000	2,387	4,725	6,918	8,826	10,369	11,626	12,690	13,610	15,108	16,385	17,636
48566	5,900	3,500	0,000	2,327	4,615	6,779	8,693	10,261	11,548	12,642	13,586	15,134	16,469	17,713
50427	6,100	3,500	0,000	2,271	4,512	6,648	8,564	10,156	11,471	12,593	13,562	15,160	16,552	17,780
52294	6,300	3,500	0,000	2,219	4,415	6,523	8,439	10,053	11,396	12,546	13,539	15,186	16,635	17,841
54165	6,500	3,500	0,000	2,170	4,324	6,404	8,318	9,953	11,323	12,500	13,516	15,212	16,715	17,897
56040	6,700	3,500	0,000	2,124	4,238	6,292	8,201	9,855	11,252	12,454	13,494	15,238	16,794	17,945
57919	6,900	3,500	0,000	2,082	4,158	6,186	8,088	9,760	11,182	12,410	13,473	15,263	16,870	17,987
59802	7,100	3,500	0,000	2,042	4,082	6,085	7,979	9,667	11,115	12,366	13,452	15,288	16,943	18,023
61689	7,300	3,500	0,000	2,005	4,011	5,989	7,875	9,576	11,049	12,323	13,432	15,313	17,013	18,054
63579	7,500	3,500	0,000	1,970	3,944	5,899	7,774	9,489	10,985	12,280	13,412	15,338	17,079	18,081
65474	7,700	3,500	0,000	1,938	3,881	5,813	7,679	9,403	10,922	12,239	13,392	15,363	17,139	18,104
67371	7,900	3,500	0,000	1,908	3,822	5,732	7,588	9,320	10,860	12,199	13,373	15,388	17,193	18,121
69272	8,100	3,500	0,000	1,879	3,766	5,654	7,501	9,240	10,800	12,160	13,355	15,413	17,241	18,137
71177	8,300	3,500	0,000	1,852	3,714	5,582	7,418	9,163	10,741	12,122	13,337	15,438	17,283	18,151
73085	8,500	3,500	0,000	1,827	3,665	5,513	7,339	9,088	10,683	12,084	13,319	15,463	17,321	18,160
74996	8,700	3,500	0,000	1,804	3,619	5,447	7,264	9,016	10,626	12,047	13,302	15,488	17,353	18,167
76910	8,900	3,500	0,000	1,782	3,576	5,386	7,193	8,947	10,572	12,011	13,286	15,513	17,382	18,172
78827	9,100	3,500	0,000	1,761	3,535	5,328	7,125	8,881	10,518	11,975	13,270	15,539	17,406	18,173
80746	9,300	3,500	0,000	1,742	3,498	5,274	7,061	8,817	10,465	11,940	13,254	15,564	17,425	18,173
82669	9,500	3,500	0,000	1,724	3,462	5,223	7,000	8,756	10,416	11,906	13,239	15,589	17,442	18,170
84594	9,700	3,500	0,000	1,707	3,429	5,175	6,943	8,698	10,366	11,872	13,225	15,615	17,456	18,166
86522	9,900	3,500	0,000	1,692	3,398	5,130	6,888	8,642	10,317	11,840	13,210	15,640	17,466	18,159
88452	10,100	3,500	0,000	1,677	3,369	5,088	6,837	8,589	10,270	11,808	13,197	15,666	17,474	18,152
90386	10,300	3,500	0,000	1,664	3,342	5,049	6,789	8,539	10,224	11,777	13,184	15,691	17,478	18,140

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
92323	10,500	3,500	0,000	1,651	3,317	5,012	6,744	8,490	10,179	11,746	13,171	15,715	17,480	18,130
94263	10,700	3,500	0,000	1,640	3,294	4,978	6,702	8,444	10,136	11,717	13,159	15,739	17,480	18,118
96207	10,900	3,500	0,000	1,629	3,272	4,946	6,663	8,399	10,095	11,688	13,147	15,759	17,477	18,105
98155	11,100	3,500	0,000	1,619	3,252	4,917	6,626	8,357	10,055	11,660	13,136	15,777	17,472	18,091
100106	11,300	3,500	0,000	1,610	3,234	4,890	6,592	8,317	10,016	11,633	13,125	15,791	17,465	18,075
102061	11,500	3,500	0,000	1,601	3,217	4,865	6,559	8,279	9,979	11,607	13,114	15,803	17,456	18,058
104019	11,700	3,500	0,000	1,593	3,202	4,842	6,529	8,243	9,944	11,581	13,105	15,812	17,446	18,040
105980	11,900	3,500	0,000	1,586	3,188	4,822	6,501	8,209	9,910	11,556	13,095	15,818	17,434	18,021
107946	12,100	3,500	0,000	1,580	3,175	4,803	6,475	8,177	9,878	11,533	13,086	15,821	17,421	18,001
109915	12,300	3,500	0,000	1,574	3,164	4,786	6,451	8,147	9,848	11,510	13,078	15,823	17,406	17,980
111888	12,500	3,500	0,000	1,569	3,154	4,771	6,428	8,118	9,819	11,488	13,070	15,822	17,389	17,958
113865	12,700	3,500	0,000	1,565	3,145	4,757	6,407	8,092	9,792	11,466	13,062	15,818	17,372	17,936
115847	12,900	3,500	0,000	1,561	3,137	4,745	6,388	8,067	9,766	11,446	13,055	15,813	17,353	17,913
117833	13,100	3,500	0,000	1,558	3,130	4,734	6,371	8,044	9,742	11,427	13,049	15,805	17,332	17,890
119823	13,300	3,500	0,000	1,555	3,124	4,724	6,355	8,023	9,720	11,409	13,043	15,796	17,311	17,866
121818	13,500	3,500	0,000	1,552	3,119	4,715	6,341	8,004	9,698	11,392	13,037	15,785	17,288	17,841
123819	13,700	3,500	0,000	1,550	3,115	4,708	6,328	7,986	9,679	11,376	13,032	15,771	17,265	17,816
125824	13,900	3,500	0,000	1,549	3,112	4,701	6,316	7,969	9,660	11,361	13,027	15,756	17,240	17,790
127835	14,100	3,500	0,000	1,548	3,110	4,695	6,305	7,955	9,644	11,347	13,023	15,739	17,214	17,763



Initial Trim = 4 m (+ve by stern)

Specific gravity = 1,025; (Density = 1,025 tonne/m³)

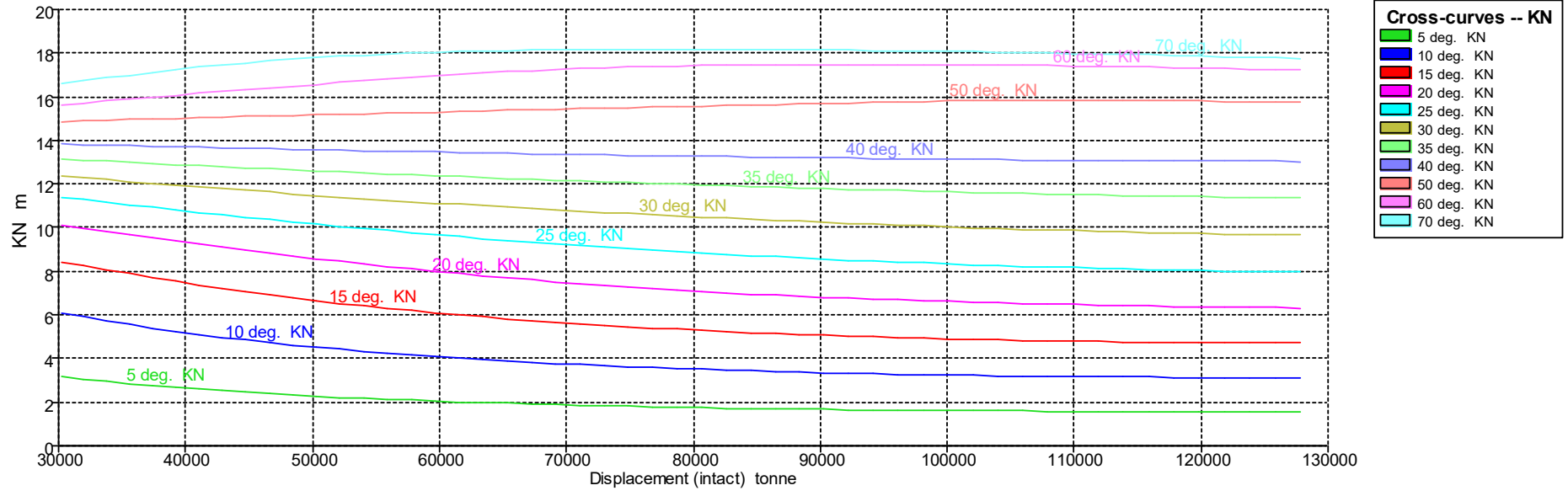
VCG = 14 m; TCG = 0 m

Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
30197	3,900	4,000	0,000	3,184	6,111	8,445	10,140	11,403	12,382	13,165	13,818	14,862	15,635	16,580
31981	4,100	4,000	0,000	3,067	5,916	8,256	9,985	11,282	12,294	13,109	13,797	14,894	15,723	16,721
33777	4,300	4,000	0,000	2,960	5,733	8,071	9,831	11,162	12,206	13,054	13,776	14,925	15,812	16,860
35583	4,500	4,000	0,000	2,860	5,561	7,891	9,679	11,044	12,120	13,000	13,754	14,955	15,899	16,994
37398	4,700	4,000	0,000	2,767	5,400	7,716	9,529	10,926	12,034	12,946	13,731	14,984	15,985	17,122
39221	4,900	4,000	0,000	2,682	5,250	7,546	9,383	10,811	11,950	12,893	13,708	15,013	16,071	17,243
41052	5,100	4,000	0,000	2,602	5,108	7,382	9,240	10,697	11,867	12,842	13,686	15,040	16,156	17,356
42891	5,300	4,000	0,000	2,528	4,976	7,224	9,099	10,585	11,785	12,793	13,664	15,068	16,240	17,462
44736	5,500	4,000	0,000	2,458	4,852	7,072	8,962	10,474	11,705	12,744	13,641	15,095	16,324	17,557
46587	5,700	4,000	0,000	2,394	4,736	6,927	8,828	10,367	11,627	12,696	13,618	15,121	16,408	17,643
48444	5,900	4,000	0,000	2,334	4,626	6,790	8,698	10,261	11,550	12,648	13,595	15,147	16,490	17,720
50305	6,100	4,000	0,000	2,278	4,523	6,659	8,570	10,158	11,474	12,602	13,572	15,173	16,572	17,788
52172	6,300	4,000	0,000	2,226	4,427	6,535	8,447	10,057	11,401	12,556	13,550	15,199	16,652	17,848
54044	6,500	4,000	0,000	2,177	4,335	6,417	8,327	9,959	11,331	12,510	13,528	15,224	16,731	17,902
55920	6,700	4,000	0,000	2,131	4,250	6,305	8,212	9,863	11,261	12,466	13,506	15,249	16,807	17,951
57800	6,900	4,000	0,000	2,088	4,169	6,199	8,100	9,769	11,193	12,422	13,485	15,274	16,880	17,994
59684	7,100	4,000	0,000	2,048	4,093	6,099	7,992	9,678	11,127	12,378	13,465	15,299	16,951	18,030
61573	7,300	4,000	0,000	2,011	4,022	6,004	7,888	9,588	11,062	12,336	13,445	15,324	17,019	18,061
63465	7,500	4,000	0,000	1,976	3,955	5,913	7,789	9,502	10,999	12,294	13,425	15,349	17,083	18,087
65361	7,700	4,000	0,000	1,944	3,892	5,828	7,694	9,417	10,937	12,254	13,406	15,374	17,142	18,109
67260	7,900	4,000	0,000	1,913	3,833	5,746	7,603	9,336	10,876	12,214	13,387	15,399	17,196	18,128
69164	8,100	4,000	0,000	1,885	3,777	5,669	7,517	9,257	10,816	12,176	13,368	15,424	17,244	18,142
71071	8,300	4,000	0,000	1,858	3,724	5,596	7,434	9,180	10,757	12,137	13,350	15,449	17,286	18,155
72981	8,500	4,000	0,000	1,833	3,675	5,527	7,356	9,106	10,700	12,099	13,333	15,473	17,324	18,166
74895	8,700	4,000	0,000	1,809	3,629	5,462	7,281	9,035	10,644	12,062	13,316	15,498	17,357	18,173
76812	8,900	4,000	0,000	1,787	3,586	5,401	7,210	8,967	10,590	12,026	13,299	15,523	17,385	18,177
78732	9,100	4,000	0,000	1,766	3,545	5,343	7,143	8,900	10,536	11,990	13,283	15,548	17,409	18,179
80655	9,300	4,000	0,000	1,747	3,507	5,288	7,079	8,837	10,485	11,955	13,268	15,574	17,430	18,179
82582	9,500	4,000	0,000	1,729	3,472	5,237	7,018	8,777	10,434	11,921	13,252	15,599	17,446	18,176
84511	9,700	4,000	0,000	1,712	3,438	5,189	6,961	8,718	10,384	11,888	13,238	15,624	17,459	18,170
86443	9,900	4,000	0,000	1,696	3,407	5,144	6,907	8,662	10,335	11,855	13,223	15,650	17,470	18,164
88377	10,100	4,000	0,000	1,682	3,378	5,102	6,856	8,610	10,288	11,823	13,210	15,675	17,477	18,156
90315	10,300	4,000	0,000	1,668	3,351	5,062	6,808	8,559	10,242	11,792	13,196	15,700	17,482	18,147

Cuaderno 4: Arquitectura naval

Marina de la Peña Herrero

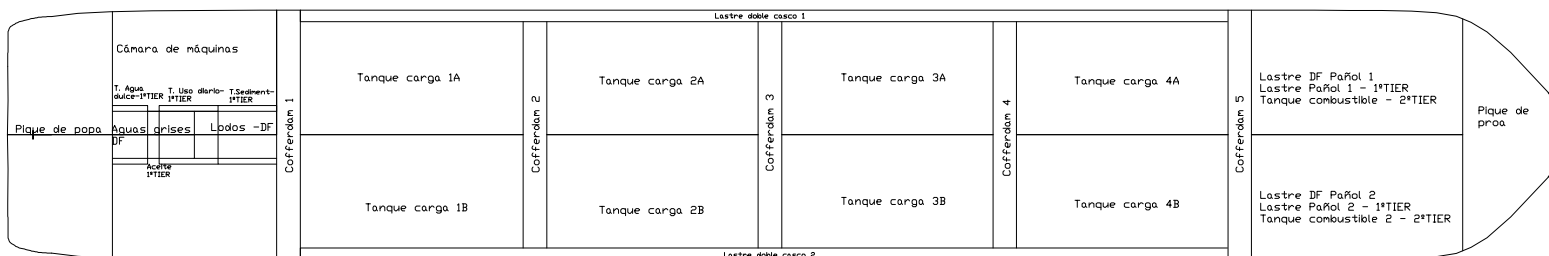
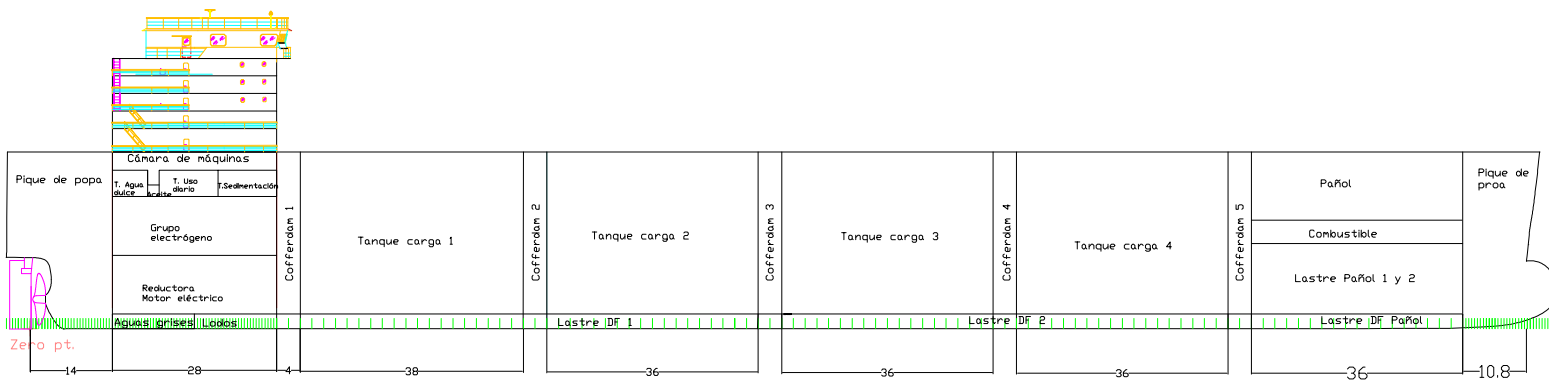
Displacement (intact) tonne	Draft Amidships m	Trim (+ve by stern) m	TCG m	KN 5,0 deg. Starb.	KN 10,0 deg. Starb.	KN 15,0 deg. Starb.	KN 20,0 deg. Starb.	KN 25,0 deg. Starb.	KN 30,0 deg. Starb.	KN 35,0 deg. Starb.	KN 40,0 deg. Starb.	KN 50,0 deg. Starb.	KN 60,0 deg. Starb.	KN 70,0 deg. Starb.
92257	10,500	4,000	0,000	1,655	3,326	5,026	6,763	8,510	10,197	11,761	13,184	15,723	17,484	18,134
94202	10,700	4,000	0,000	1,644	3,303	4,992	6,721	8,463	10,154	11,732	13,171	15,745	17,484	18,123
96152	10,900	4,000	0,000	1,633	3,281	4,960	6,682	8,419	10,113	11,703	13,160	15,766	17,481	18,110
98105	11,100	4,000	0,000	1,623	3,261	4,931	6,645	8,376	10,072	11,675	13,148	15,783	17,476	18,095
100062	11,300	4,000	0,000	1,614	3,243	4,904	6,610	8,336	10,034	11,648	13,137	15,798	17,469	18,079
102023	11,500	4,000	0,000	1,605	3,226	4,879	6,577	8,297	9,997	11,622	13,127	15,809	17,461	18,062
103987	11,700	4,000	0,000	1,598	3,211	4,856	6,546	8,261	9,961	11,596	13,117	15,818	17,450	18,044
105955	11,900	4,000	0,000	1,591	3,197	4,835	6,518	8,227	9,928	11,571	13,108	15,824	17,438	18,024
107927	12,100	4,000	0,000	1,584	3,184	4,816	6,491	8,194	9,895	11,547	13,099	15,828	17,425	18,004
109902	12,300	4,000	0,000	1,579	3,173	4,799	6,467	8,164	9,865	11,524	13,090	15,829	17,410	17,983
111881	12,500	4,000	0,000	1,574	3,162	4,784	6,444	8,135	9,836	11,502	13,082	15,828	17,393	17,961
113865	12,700	4,000	0,000	1,569	3,153	4,770	6,423	8,108	9,809	11,481	13,074	15,825	17,375	17,938
115852	12,900	4,000	0,000	1,565	3,146	4,758	6,403	8,083	9,783	11,461	13,067	15,819	17,356	17,916
117844	13,100	4,000	0,000	1,562	3,139	4,746	6,385	8,060	9,758	11,441	13,061	15,811	17,336	17,892
119840	13,300	4,000	0,000	1,559	3,133	4,736	6,369	8,039	9,735	11,423	13,055	15,802	17,315	17,868
121841	13,500	4,000	0,000	1,557	3,128	4,727	6,354	8,019	9,714	11,406	13,049	15,790	17,292	17,843
123846	13,700	4,000	0,000	1,555	3,124	4,719	6,341	8,000	9,694	11,390	13,044	15,776	17,268	17,818
125856	13,900	4,000	0,000	1,553	3,121	4,712	6,329	7,984	9,675	11,375	13,040	15,761	17,243	17,792
127872	14,100	4,000	0,000	1,552	3,119	4,706	6,318	7,969	9,658	11,361	13,036	15,744	17,217	17,766



Fdo: Marina de la Peña Herrero

Ferrol, 15 de Septiembre de 2022

ANEXO I: PLANO COMPARTIMENTADO GENERAL



BUQUE TANKER LNG 140000 m3



PROFESOR:
PABLO FARIÑAS ALVARIÑO
ALBERTO ARCE CEINOS

FECHA: JULIO 2022

ALUMNO/A:
MARINA DE LA PEÑA HERRERO

NOMBRE DEL DOCUMENTO:
COMPARTIMENTADO BÁSICO

Número 2122-TFG-73