

CONTRATO

OBJETO:

**SUMINISTRO DE CUATRO PATRULLEROS OCEÁNICOS
MULTIPROPÓSITO**

CELEBRADO ENTRE:

**MINISTERIO DE DEFENSA, ARMADA ARGENTINA -
REPÚBLICA ARGENTINA, EN CARÁCTER DE COMPRADOR,**

Y

**LA EMPRESA NAVAL GROUP DE LA REPÚBLICA FRANCESA
EN CARÁCTER DE VENDEDOR**

CONTRATO ARA-NAVAL GROUP N° 01/2018

2018

22

AUTENTICACION


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En la CIUDAD AUTÓNOMA DE BUENOS AIRES a los veintidós días del mes de junio de 2018, entre: MINISTERIO DE DEFENSA – ARMADA ARGENTINA – ESTADO NACIONAL ARGENTINO, representado por el Señor JEFE DEL ESTADO MAYOR GENERAL DE LA ARMADA ARGENTINA, VICEALMIRANTE DE INFANTERÍA DE MARINA José Luis VILLÁN en adelante denominado “COMPRADOR”, por una parte, y la empresa, con mayoría accionaria del Estado Francés, NAVAL GROUP con domicilio en 40 Rue du Docteur Finlay, 75015, París FRANCIA representada por el Sr. VICEPRESIDENTE DE VENTAS PARA AMÉRICA LATINA de NAVAL GROUP, Olivier MICHEL en adelante denominada “VENDEDOR”, por la otra parte.

CONSIDERANDO:

Que entre el Gobierno de la República Francesa y el Gobierno de la República Argentina se suscribió un Acuerdo de Cooperación en el Ámbito de la Defensa, firmado el 14 de octubre de 1998 y aprobado por la Ley N° 25.251, en el cual, entre otros compromisos, se estableció el acompañamiento de la República Francesa, en la modernización de la herramienta de defensa argentina y el apoyo al proceso de integración regional sobre la temática de Defensa y Seguridad.

Que, en el mismo orden, con fecha 24 de febrero de 2016 se firmó una Carta de Intención, entre el Ministerio de Asuntos Exteriores y de Desarrollo Internacional de la República de Francia y el Ministerio de Defensa de la República Argentina, reiterando la voluntad común de reforzar la cooperación en el ámbito de la Defensa, particularmente en la modernización de las Fuerzas Armadas Argentinas, a través de adquisiciones de equipamientos de defensa franceses.

Que el VENDEDOR ha presentado una oferta comercial formal para la adaptación y provisión al COMPRADOR del OPV L'Adroit, así como también la construcción y provisión al COMPRADOR de tres (3) buques Patrulleros Oceánicos Multipropósito en adelante “OPV 87” a ser construidos en la REPÚBLICA FRANCESA en astilleros del VENDEDOR, bajo las condiciones que en dicha oferta se especifican.

Que, asimismo, el VENDEDOR presentó, conjuntamente con la oferta comercial, una propuesta de financiamiento para dichos buques sujeta a la aprobación del organismo reasegurador de crédito francés BPI FRANCE.

Que el COMPRADOR ha analizado los documentos aludidos entendiendo que la referida propuesta resulta satisfactoria en los distintos aspectos involucrados en el proyecto y cumple

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en forma adecuada con los requerimientos inicialmente transmitidos por la ARMADA ARGENTINA.

Por ello;

Las PARTES acuerdan suscribir el presente CONTRATO bajo los términos y condiciones que seguidamente se establecen, los cuales constituyen la totalidad del acuerdo entre las dos PARTES y reemplazan cualquier compromiso o acuerdo anterior celebrado a este respecto, ya sea oral o escrito.

ARTÍCULO 1. DEFINICIONES Y ABREVIATURAS

Salvo que en el presente CONTRATO se manifieste lo contrario, cada uno de los siguientes términos tendrá el significado que se detalla a continuación:

ACEPTACIÓN: reconocimiento de la finalización de los trabajos parciales o totales de adaptación o construcción de los OPV con sus avances de ejecución, según lo establecido por el COMPRADOR en el Certificado de Aceptación pertinente.

ARA: ARMADA ARGENTINA.

ARGENTINA: REPÚBLICA ARGENTINA.

ASTILLERO(S) DEL VENDEDOR EN FRANCIA: lugar(es) físico(s) e instalaciones donde se construirán y entregarán las tres (3) unidades OPV 87 nuevas, y donde se adaptará y entregará el OPV L'Adroit.

BFE (BUYER FURNISHED EQUIPMENT): Equipos pertenecientes al COMPRADOR, que entregará al VENDEDOR, para ser integrados a los OPV.

BOTADURA: Acción de poner en el agua cada OPV 87 una vez que se alcanza un determinado estado en el plan de construcción y completamiento del buque.

BUQUE "LISTO PARA OPERAR": condición en que los OPV deberán entregarse al COMPRADOR, completos y con todos los sistemas y equipos detallados en los Anexos A y B del CONTRATO, en estado operativo, puestos a prueba y aprobados por la SOCIEDAD DE CLASIFICACIÓN (SC), junto con la logística de a bordo y los materiales necesarios para el normal funcionamiento de los OPV según se detalla en el Anexo C, salvo lo específicamente excluido en el texto de este CONTRATO.

CERTIFICADO DE ACEPTACIÓN: certificado o protocolo para la ENTREGA y ACEPTACIÓN de los OPV y demás SUMINISTROS y SERVICIOS, extendido y suscripto

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según se indica en el Anexo D y según modelo en el Anexo H. Dicho certificado deberá ser extendido por el VENDEDOR, aceptado por la CI y suscripto por ambas PARTES.

CIF: "Costo, Seguro y Transporte", según INCOTERMS 2010 de la CÁMARA DE COMERCIO INTERNACIONAL.

CMMS: (COMPUTERISED MAINTENANCE MANAGEMENT SYSTEM). Sistema de manejo y planificación del mantenimiento de los buques que forma parte del ILS.

COMISIÓN DE INSPECCIÓN (CI): representante(s) designado(s) por el COMPRADOR para desempeñar tareas en el lugar de construcción de los OPV 87 con amplios poderes y facultades para aprobar y firmar documentos relativos al presente CONTRATO en representación del COMPRADOR.

COMPRADOR: ESTADO MAYOR GENERAL DE LA ARMADA ARGENTINA

CONTRATO: el presente documento que contiene las cláusulas, términos, condiciones, Anexos y apéndices que regulan la relación jurídica entre el COMPRADOR y el VENDEDOR.

CONTRATO FINANCIERO: aquel contrato que deberá ser acordado y firmado entre el banco o los bancos seleccionados por el VENDEDOR, y las autoridades competentes de la REPÚBLICA ARGENTINA para financiar el presente CONTRATO.

DÍAS HÁBILES O BANCARIOS: días laborables para las entidades bancarias en PARIS, FRANCIA y en BUENOS AIRES, ARGENTINA.

DÍA / DÍAS: día / días calendario /s corridos.

€: EUROS.

ENTREGA: puesta a disposición del COMPRADOR de cada uno de los OPV en condición de "LISTOS PARA OPERAR", una vez aprobados por el COMPRADOR. Algunas tareas serán realizadas luego de la FECHA DE ENTREGA según se detalla en Anexo B. También significa la puesta a disposición del COMPRADOR de algún SUMINISTRO específico que se hubiera acordado entre las PARTES en forma separada a la ENTREGA de él o los OPV.

EQUIPO: conjunto de componentes que forman parte de un SISTEMA a ser instalado en los OPV.

FACTURA: documento fiscal válido para ambas PARTES, donde se detallan los SERVICIOS y/o SUMINISTROS entregados, así como el monto total que el COMPRADOR deberá abonar al VENDEDOR.

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FCA: "Free Carrier", según INCOTERMS 2010 de la CÁMARA DE COMERCIO INTERNACIONAL.

FECHA DE ENTRADA EN VIGENCIA DEL CONTRATO o T0: fecha en que se cumplen todos los requisitos dispuestos en el Artículo 25, "FECHA DE ENTRADA EN VIGENCIA DEL CONTRATO".

FECHA DE ENTREGA: fecha en la cual el VENDEDOR pone en disponibilidad del COMPRADOR y el COMPRADOR recibe el correspondiente OPV y cualquier SUMINISTRO tal cual lo acordado en el presente CONTRATO.

GARANTÍA TÉCNICA: garantía de carácter jurídico y vinculante extendida por el VENDEDOR, donde se deja constancia de que el bien o servicio se encuentra en condiciones de uso, conforme lo establecido y carece de defectos materiales o de construcción. Asimismo, significa que dicho bien o servicio cumple con los requisitos establecidos por ley u otra normativa aplicable a la fecha de la firma del CONTRATO. La GARANTÍA TÉCNICA también describe las condiciones y el período durante el cual el VENDEDOR deberá reparar, reemplazar o compensar las partes defectuosas, según las estipulaciones del Artículo 13 de este CONTRATO.

HAT: PRUEBA de aceptación en puerto, por su abreviatura en inglés.

IACS: Asociación Internacional de Sociedades de Clasificación, por su abreviatura en inglés.

INGENIERO DE GARANTÍA: ingeniero designado por el VENDEDOR para coordinar con el COMPRADOR la asistencia técnica relativa a la GARANTÍA TÉCNICA.

ILS: Soporte Logístico Inicial, por su sigla en inglés.

MCR: abreviatura en inglés de "régimen máximo continuo". Consiste en la potencia máxima que una máquina es capaz de producir de manera continua en condiciones normales.

MODIFICACIONES: modificaciones introducidas a los métodos y procedimientos de construcción de los OPV, su maquinaria y equipamiento, que no afecten las especificaciones de los OPV o sus capacidades operativas, ni puedan generar variaciones económicas y/o afectar la FECHA DE ENTREGA.

LUGAR DE ENTREGA: puerto, ciudad, país donde se entregarán a la ARA el o los OPV o aquellos SUMINISTROS específicos que se hubiera acordado entre las PARTES en forma separada a la ENTREGA de él o los OPV.

OPV: cada uno de los (4) cuatro PATRULLEROS OCEÁNICOS MULTIPROPÓSITO que deben entregarse conforme el presente CONTRATO. La abreviatura OPV hace referencia al plural cuando se trata del lote completo de 4 buques que se entregarán.

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OPV 87: cada uno de los (3) tres PATRULLEROS OCEÁNICOS MULTIPROPÓSITO que deben construirse y entregarse conforme el presente CONTRATO.

OPV "L'Adroit": PATRULLERO OCEÁNICO MULTIPROPÓSITO que debe adaptarse y entregarse conforme el presente CONTRATO.

PARÁMETROS DE RENDIMIENTO PRINCIPALES: significan los parámetros de performance más relevantes aplicables a los OPV 87, utilizados para evaluar los OPV 87 durante las PRUEBAS de aceptación definidas en las especificaciones. Véase Anexo A.

PARTE: puede hacer referencia al COMPRADOR o bien al VENDEDOR.

PARTES: hace referencia tanto al COMPRADOR como al VENDEDOR.

PLANOS PRINCIPALES: planos generales incluidos en la documentación de los OPV que el VENDEDOR debe entregar al COMPRADOR.

PRECIO CONTRACTUAL: suma de dinero total que el COMPRADOR se obliga a abonar al VENDEDOR en conformidad con el Artículo 4 del presente CONTRATO.

PROVEEDOR PRINCIPAL: Proveedor de un(os) equipo(s) mayor(es) de los OPV que contribuye(n) directamente a los PARÁMETROS DE RENDIMIENTO PRINCIPALES.

PRUEBA: uno o varios ensayos establecidos en las especificaciones u otra clase de tareas relacionadas a los mismos que las PARTES acuerden y estimen necesarias, relacionadas con el objeto de este CONTRATO.

SAT: PRUEBAS de aceptación en mar, por su abreviatura en inglés

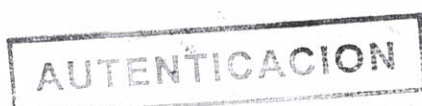
SERVICIOS: hace referencia a la provisión de mano de obra, capacitación, y toda otra prestación no incluida en los SUMINISTROS definidas en el Anexo B.

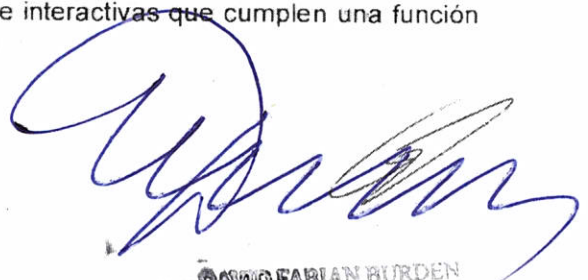
SISTEMA: conjunto de SUBSISTEMAS.

SC: Sociedad de Clasificación de primera línea que forme parte del IACS, elegida por el VENDEDOR con la conformidad del COMPRADOR para supervisar el trabajo de construcción y el cumplimiento de sus reglas y estándares, y certificar los OPV.

SUMINISTROS: hace referencia a todos y cada uno de los materiales y equipos necesarios para la adaptación o la construcción del buque en condición "LISTO PARA OPERAR", como, asimismo, todo otro bien o producto auxiliar o complementario que se obliga a suministrar el VENDEDOR.

SUBSISTEMA: conjunto de partes interconectadas e interactivas que cumplen una función esencial dentro de un sistema principal.




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TÉRMINOS Y CONDICIONES: la totalidad de las cláusulas y Anexos que conforman el presente CONTRATO.

VENDEDOR: la empresa NAVAL GROUP de FRANCIA.

ARTÍCULO 2. OBJETO DEL CONTRATO Y ALCANCE DE LOS SUMINISTROS

El VENDEDOR se compromete a adaptar y entregar el OPV L'Adroit, así como construir y entregar tres (3) OPV 87 nuevos y el COMPRADOR a adquirir los cuatro (4) OPV en condición de buque "LISTO PARA OPERAR" acorde a las especificaciones técnicas y demás condiciones incluidas en el presente CONTRATO, así como llevar a cabo las PRUEBAS DE ACEPTACIÓN en puerto y en mar, y entregar todos los SUMINISTROS y SERVICIOS conforme a lo establecido en el mismo y sus Anexos.

El alcance de los SUMINISTROS y SERVICIOS es el que a continuación se detalla:

2.1 PATRULLEROS OCEÁNICOS MULTIPROPÓSITO (OPV):

2.1.1 El OPV L'Adroit, en conformidad con el Anexo A2.

2.1.2 Tres (3) OPV 87, en conformidad con el Anexo A1, incluyendo la lista de fabricantes.

2.1.3 El OPV L'Adroit será adaptado y entregado por el VENDEDOR en el ASTILLERO DEL VENDEDOR EN FRANCIA, en condición FCA

2.1.4 Los tres (3) OPV 87 serán construidos y entregados por el VENDEDOR en el ASTILLERO DEL VENDEDOR EN FRANCIA, en condición FCA.

2.1.5 Los cuatro (4) OPV que el VENDEDOR se compromete a adaptar o construir y entregar al COMPRADOR, serán provistos bajo la condición "LISTO PARA OPERAR". Tal estado implica las siguientes condiciones que serán cumplidas antes o luego de la ENTREGA de cada OPV según se detalla en el Anexo B.

2.1.5.1 La provisión de los materiales y SERVICIOS necesarios y suficientes para la adaptación o la construcción de los buques de acuerdo con las especificaciones y equipos según se establece en el Anexo A.

2.1.5.2 La contratación de una SC de primera línea que forme parte del IACS, para la certificación de los buques.



- 2.1.5.3 La provisión de la mano de obra necesaria para la ejecución de todas las tareas que requiera la obtención de los buques en dicha condición.
- 2.1.5.4 La provisión al COMPRADOR de la documentación, planos y derechos de uso de los mismos en forma no exclusiva y no cedible, como asimismo, el otorgamiento de las correspondientes patentes para la libre utilización y disposición de los buques.
- 2.1.5.5 La instrucción y adiestramiento necesarios y suficientes para la operación de este tipo de buques para las dotaciones del primer y segundo OPV, de acuerdo con lo indicado en el Anexo E.
- 2.1.5.6 El dictado de los cursos de mantenimiento para el personal de los arsenales Navales del COMPRADOR de acuerdo con lo indicado en el Anexo E.
- 2.1.5.7 Cumplimentar la entrega de todos los elementos, equipos adicionales y logísticos integrantes de los buques acorde con lo estipulado en los Anexos pertinentes.
- 2.1.5.8 Entregar la correspondiente documentación y elementos constitutivos del soporte logístico inicial, de acuerdo con lo establecido en el Anexo C.
- 2.1.5.9 Efectuar todas las PRUEBAS de equipos y sistemas (HAT y SAT) las cuales deben ser aprobadas a entera satisfacción del COMPRADOR.
- 2.1.5.10 Entregar en tiempo y forma el OPV L'Adroit en condición FCA, en el ASTILLERO DEL VENDEDOR en FRANCIA.
- 2.1.5.11 Entregar en tiempo y forma los tres (3) OPV 87 en condición FCA, en el ASTILLERO DEL VENDEDOR en FRANCIA.
- 2.1.5.12 Entregar todos los repuestos de a bordo y equipamientos, según Anexo C.
- 2.1.5.13 Entregar los documentos de a bordo según Anexo C.
- 2.1.5.14 La provisión de los combustibles, lubricantes y viveres suficientes para treinta y dos (32) personas, necesarios para el tránsito directo de los cuatro (4) OPV desde la REPÚBLICA FRANCESA para su traslado a la REPÚBLICA ARGENTINA, acorde a lo indicado en el Anexo B.

2.2 CAPACITACIÓN BRINDADA POR EL VENDEDOR.

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El VENDEDOR deberá capacitar en sus instalaciones en FRANCIA al personal enviado por el COMPRADOR. La capacitación deberá seguir el programa acordado por ambas PARTES para la ENTREGA de los OPV, como se establece en el Anexo E. Se destacan dos áreas de capacitación en particular:

- a) Tripulación (capacitación sobre mantenimiento y operación), según el Anexo E.
- b) Ingenieros y personal de mantenimiento de los Arsenales de la ARA, conforme al Anexo E.

2.3 DOCUMENTOS Y MANUALES PARA LA OPERACIÓN Y EL MANTENIMIENTO DE LOS OPV.

El VENDEDOR deberá entregar los manuales de mantenimiento y la documentación técnica necesarios para operar los OPV, de acuerdo con las disposiciones de este CONTRATO y las especificaciones técnicas y planes generales pertinentes, suscriptos por ambas PARTES, que integran el CONTRATO. Al respecto en el Anexo B se encuentran detallados los momentos en los cuales se deberá hacer entrega de los manuales y documentación aludidos.

ARTÍCULO 3. NORMAS Y REGLAMENTACIÓN APLICABLES A LA EJECUCIÓN DEL OBJETO DEL CONTRATO Y SOCIEDAD DE CLASIFICACIÓN.

- 3.1 El diseño, la adaptación o la construcción de los OPV y todos sus sistemas deberán llevarse a cabo en cumplimiento con las normas y reglamentaciones dispuestas por la SC BUREAU VERITAS (BV) que se encuentren vigentes a la fecha de la firma del presente CONTRATO según se detalla en Anexo A. Los OPV deberán cumplir con las normas, reglamentaciones y requisitos exigidos por los organismos internacionales que regulan la actividad en el ámbito marítimo, según se encuentran definidos en el Anexo A.
- 3.2 Asimismo, deberán cumplir con las modificaciones que se incorporen a las normas mencionadas, que hayan sido publicadas y hayan entrado en vigencia con anterioridad a la fecha de firma de este CONTRATO. En el momento de la entrega, los OPV deberán cumplir con las normas y reglamentaciones de clase, estado de bandera y otras regulaciones indicadas en las especificaciones, incorporadas antes de la fecha de firma del CONTRATO.

- 3.3 En este marco de definición técnica, las resoluciones de la SC respecto del cumplimiento o incumplimiento de las normas y reglamentaciones de clasificación tendrán carácter definitivo y vinculante para las PARTES firmantes.
- 3.4 Todos los gastos, incluidos aquellos correspondientes a la SC, correrán por cuenta del VENDEDOR y se encuentran incluidos en el precio contractual. Un inspector enviado por la SC deberá confirmar la finalización de cada etapa de construcción, a los efectos de la certificación parcial y la realización de pruebas. Asimismo, el asesoramiento de este inspector podrá utilizarse para dirimir cuestiones y conflictos de naturaleza técnica.
- 3.5 Todas las normas, reglamentaciones y requisitos exigidos y notación de clase referidas en este Artículo 3 son detalladas en el Anexo A.

ARTÍCULO 4. PRECIO CONTRACTUAL Y CONDICIONES DE PAGO

4.1 PRECIO CONTRACTUAL.

El PRECIO CONTRACTUAL para el suministro de los cuatro (4) OPV en condición de buque "LISTO PARA OPERAR" es de EUROS DOSCIENTOS OCHENTA Y SIETE MILLONES SEISCIENTOS MIL (€ 287.600.000) Este precio es fijo y no sujeto a reajustes de ningún tipo.

El precio de los OPV establecido precedentemente incluye todos los SERVICIOS, documentación, sistema de logística inicial, munición y demás elementos emergentes de los Anexos A, B, C, E y F.

4.2 MONEDA.

Todos los pagos que se efectúen al VENDEDOR en el marco de este CONTRATO deberán realizarse en Euros (€) como moneda única establecida y no podrán ser realizados en otra moneda, de acuerdo con lo previsto en el CONTRATO FINANCIERO.

4.3 PAGOS.

4.3.1 MONTO DEL PRECIO CONTRACTUAL

El COMPRADOR deberá abonar al VENDEDOR el monto total del PRECIO CONTRACTUAL en las condiciones establecidas en el presente CONTRATO




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a través del CONTRATO FINANCIERO que deberá suscribirse entre el o los bancos seleccionados por el VENDEDOR y las autoridades de la REPÚBLICA ARGENTINA, competentes en la aprobación de dicho instrumento de financiamiento.

4.3.2 FORMA DE PAGO.

Los pagos que el COMPRADOR deberá efectuar al VENDEDOR durante el desarrollo de este CONTRATO, constarán de un pago anticipado único como porcentaje del monto del PRECIO CONTRACTUAL, seis (6) cuotas para cada OPV 87 y dos (2) cuotas para el OPV L'Adroit, conforme se produzca el avance de los trabajos, según la forma de implementación que se indica en las tablas del Artículo 4.4.

4.4 CONDICIONES DE PAGO.

4.4.1 Ambas PARTES establecen de común acuerdo los siguientes cronogramas de pagos para cada OPV, según:

HITOS DEL OPV "L'ADROIT"		OPV "L'ADROIT"
		€ 30.000.000,00
Anticipo	Anticipo para entrada en vigencia del CONTRATO ("Pago Anticipado"). La participación porcentual del OPV en este anticipo, será igual a la división proporcional del Pago Anticipado total concedido.	20% (€ 6.000.000,00)
CUOTA 1	Instalación de la segunda unidad de osmosis inversa, según Anexo A2	40% (€ 12.000.000,00)
CUOTA 2	Entrega del OPV, según Anexo B2	40% (€ 12.000.000,00)

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HITOS DE LOS OPV 87		OPV 87 N°1	OPV 87 N°2	OPV 87 N°3
		€ 85.866.666,67	€ 85.866.666,67	€ 85.866.666,67
Anticipo	Anticipo para entrada en vigencia del CONTRATO ("Pago Anticipado"). La participación porcentual de cada OPV en este anticipo, será igual a la división proporcional del Pago Anticipado total concedido.	20% (€17.173.333,34)	20% (€17.173.333,34)	20% (€17.173.333,33)
CUOTA 1	Construcción de la parte delantera del buque correspondiente, según Anexo D	25% (€21.466.666,67)	25% (€21.466.666,67)	25% (€21.466.666,67)
CUOTA 2	Instalación de la primera parte de la quilla, según Anexo D	20% (€17.173.333,33)	20% (€17.173.333,33)	20% (€17.173.333,33)
CUOTA 3	Construcción y unión de la parte central del casco, según Anexo D	15% (€12.880.000,00)	15% (€12.880.000,00)	15% (€12.880.000,00)
CUOTA 4	Instalación de los motores de propulsión, según Anexo D	10% (€8.586.666,67)	10% (€8.586.666,67)	10% (€8.586.666,67)
CUOTA 5	Botadura del OPV, según Anexo D	5% (€4.293.333,33)	5% (€4.293.333,33)	5% (€4.293.333,33)
CUOTA 6	Entrega del OPV, según Anexo D	5% (€4.293.333,33)	5% (€4.293.333,33)	5% (€4.293.333,33)

4.4.2 Documentos necesarios para certificar el pago anticipado:

- Dos (2) copias de la FACTURA enviada por el VENDEDOR.
- GARANTÍA BANCARIA de acuerdo al Artículo 17.1 y el Anexo I.

4.4.3 Documentos necesarios para certificar los pagos de cada cuota:

- Dos (2) copias de la FACTURA enviada por el VENDEDOR.
- CERTIFICADO DE ACEPTACIÓN de los trabajos antes descriptos, firmado por los representantes del VENDEDOR y el COMPRADOR.

ARTÍCULO 5. PENALIDADES.

El COMPRADOR tendrá únicamente el derecho a reclamar penalidades como indemnización en caso de incumplimiento imputable al VENDEDOR de sus compromisos contractuales relativos a la FECHA DE ENTREGA y a las performances de alcance y velocidad, sin

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perjuicio de las indemnizaciones que correspondan por otros incumplimientos distintos a los mencionados a continuación:

5.1 FECHA DE ENTREGA

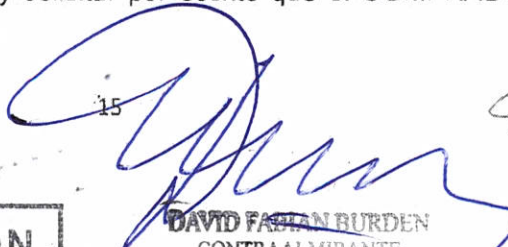
5.1.1 Por "FECHA DE ENTREGA" se entiende la fecha en que se efectúa la ENTREGA de los OPV, en conformidad con las disposiciones del presente CONTRATO.

5.1.2 El COMPRADOR no aplicará penalidad al VENDEDOR en caso de un retraso de hasta noventa (90) DÍAS (a finalizar en la medianoche del DÍA número noventa) en la ENTREGA de los OPV, a partir de la FECHA DE ENTREGA estipulada en el Anexo D.

5.1.3 En caso de que el retraso en la ENTREGA de los OPV supere los noventa (90) DÍAS desde la FECHA DE ENTREGA estipulada, el VENDEDOR será pasible de una penalidad equivalente a EUROS SIETE MIL QUINIENTOS (€ 7.500) por cada DÍA de retraso luego de los noventa (90) DÍAS mencionados. El pago de la penalidad será mediante transferencia bancaria a favor del COMPRADOR o mediante la ENTREGA de suministros y/o servicios adicionales por un valor equivalente, a elección de éste. En tal supuesto el VENDEDOR deberá presentar una oferta al COMPRADOR de los suministros y/o servicios requeridos. La demora y su penalidad no deberán superar los ciento ochenta (180) DÍAS, luego de transcurridos los noventa (90) DÍAS de retraso considerados, por un equivalente a EUROS UN MILLÓN TRESCIENTOS CINCUENTA MIL (€ 1.350.000) por OPV. El monto precedente es el máximo aplicable por el COMPRADOR al VENDEDOR respecto a la demora en la ENTREGA de cada OPV imputable al VENDEDOR.

5.1.4 En caso de que el retraso en la ENTREGA de los OPV 87 supere los doscientos setenta (270) DÍAS desde la FECHA DE ENTREGA estipulada, el COMPRADOR podrá rescindir el CONTRATO en virtud del Artículo 22 del presente. En caso de que una vez transcurridos los doscientos setenta (270) DÍAS, el COMPRADOR no haya notificado al VENDEDOR su decisión de rescindir el CONTRATO, el VENDEDOR podrá enviar al COMPRADOR, en cualquier momento, notificación escrita donde indique la FECHA DE ENTREGA estimada del OPV 87 y solicitar por escrito que el COMPRADOR decida si

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acepta la nueva FECHA DE ENTREGA o si rescinde el CONTRATO. En este supuesto, el COMPRADOR deberá responder dentro de los diez (10) DÍAS contados desde la fecha en que reciba la notificación si rescinde el CONTRATO o si acepta la ENTREGA del OPV 87 en una fecha que ambas PARTES acordarán. Se sobreentiende que en caso de incumplimiento de ENTREGA del OPV en la nueva fecha dispuesta, el COMPRADOR tendrá el mismo derecho de rescisión del CONTRATO en virtud de los mismos términos y condiciones.

5.2 PERFORMANCE INSUFICIENTE.

- 5.2.1 El COMPRADOR no tendrá derecho a reclamar una penalidad en caso de que la velocidad efectiva del OPV 87 sea de hasta medio (1/2) nudo por debajo de la velocidad garantizada en el Artículo 10 del CONTRATO.
- 5.2.2 El COMPRADOR no tendrá derecho a reclamar una penalidad en caso de que el alcance máximo efectivo sea de hasta doscientas (200) millas por debajo del alcance máximo garantizado en el Artículo 10 del CONTRATO.
- 5.2.3 No obstante, en caso de que se presente una deficiencia mayor a medio (1/2) nudo de velocidad efectiva, por debajo de la velocidad garantizada, o una deficiencia mayor a doscientas (200) millas de alcance efectivo, por debajo de los valores garantizados según lo previsto en el Anexo A, la o las penalidades serán calculadas según lo dispuesto en el Artículo 10.
- 5.2.4 En caso de que la deficiencia de la velocidad efectiva de los OPV 87 una vez agotadas las PRUEBAS de mar (SAT) resulte inferior a la velocidad garantizada en más de dos (2) nudos, o que la deficiencia del alcance efectivo de los OPV 87 una vez agotadas las PRUEBAS de mar (SAT) resulte inferior al alcance garantizado en más de ochocientas (800) millas, el COMPRADOR podrá rechazar los OPV 87 y rescindir el CONTRATO en virtud del Artículo 22.2 del presente CONTRATO, o bien a su solo criterio podrá aceptar los OPV 87 con una reducción del PRECIO CONTRACTUAL a ser establecida entre las PARTES u otra forma de compensación que las mismas acuerden.

ARTÍCULO 6. MODIFICACIONES

- 6.1. Las especificaciones y planos que sustentan la construcción de los OPV podrán modificarse en cualquier momento, siempre y cuando medie acuerdo de las PARTES por escrito. Asimismo, es condición que estos cambios no afecten otros compromisos

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asumidos por el VENDEDOR, según su leal saber y entender, y que no tengan un impacto adicional en el PRECIO CONTRACTUAL, la FECHA de ENTREGA o las especificaciones de los OPV.

6.2 MODIFICACIONES EN LAS NORMAS Y REGULACIONES.

6.2.1 Cabe la posibilidad de que, luego de la fecha de suscripción del presente CONTRATO, la SC u otros entes reguladores autorizados modifiquen los requisitos relativos a las normas y regulaciones aplicables a la construcción de los OPV que se detallan en este CONTRATO. En este caso, una vez recibida la notificación sobre las modificaciones, el VENDEDOR o el COMPRADOR (quien haya recibido la notificación primero) deberá notificar a la otra PARTE en detalle y por escrito. A partir de ese momento, el COMPRADOR tendrá veintiún (21) DÍAS para decidir e informar al VENDEDOR por escrito las modificaciones que deberán realizarse a los OPV, en caso de ser necesarias. El VENDEDOR deberá cumplir con las modificaciones en la construcción de los OPV, siempre y cuando las PARTES hayan acordado lo siguiente con anterioridad:

- a) Que la incidencia de las modificaciones no afecte el PRECIO CONTRACTUAL de los OPV;
- b) La necesidad o no de una prórroga de la FECHA DE ENTREGA de los OPV, debido a la incorporación de las modificaciones;
- c) Una disminución razonable de la velocidad o del máximo alcance garantizados de los OPV, en caso de resultar necesario debido a la incorporación de las modificaciones;
- d) Otra clase de enmienda en los TÉRMINOS Y CONDICIONES del presente CONTRATO, que fuera necesaria a causa de las modificaciones.

6.2.2 El acuerdo entre las PARTES respecto de las modificaciones mencionadas en este Artículo deberá formalizarse del mismo modo en que el presente CONTRATO estipula modificaciones en las especificaciones o planos.

6.3 SUSTITUCIÓN DE MATERIALES O EQUIPOS.

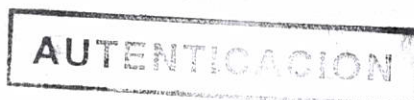
En caso de imposibilidad de conseguir en tiempo y forma alguno de los materiales o equipos detallados en las especificaciones u otras cláusulas del presente CONTRATO para la construcción de los OPV, y que ello impida cumplir con la FECHA DE

ENTREGA, el VENDEDOR podrá suministrar otros materiales o equipos de calidad equivalente (dentro de la fecha estipulada en el cronograma de construcción del OPV por parte del VENDEDOR). Estos SUMINISTROS equivalentes deberán cumplir los requisitos de la SC y las normas, regulaciones y recomendaciones aplicables a la construcción de los OPV. En este caso, el COMPRADOR y el VENDEDOR deberán acordar por escrito la mejor solución técnica a la dificultad planteada. Para que este procedimiento tenga validez el VENDEDOR deberá demostrar previamente al COMPRADOR con documentación fehaciente que solicitó los materiales y equipos con la suficiente antelación y que existió una negativa del fabricante de los mismos a suministrarlos.

ARTÍCULO 7. SUPERVISIÓN E INSPECCIONES

- 7.1. El COMPRADOR designará una Comisión de Inspección (CI) que será destacada para supervisar en el ASTILLERO DEL VENDEDOR EN FRANCIA las tareas de construcción y PRUEBAS de los tres (3) OPV 87. Dicha Comisión podrá también supervisar en el ASTILLERO DEL VENDEDOR EN FRANCIA las tareas de adaptación y PRUEBAS del OPV L'Adroit. Esta Comisión se conformará con hasta siete (7) integrantes, quienes desempeñarán sus funciones durante las horas laborales normales de los astilleros. El VENDEDOR deberá ofrecer a su costa, a la CI servicios e instalaciones apropiados para el desarrollo de sus funciones en el ASTILLERO DEL VENDEDOR, donde se construirán los tres (3) OPV 87. La organización, conformación y demás aspectos atinentes a la CI serán notificados por el COMPRADOR al VENDEDOR, a través de un medio fehaciente, dentro de los treinta (30) DÍAS contados a partir de la fecha de entrada en vigencia del CONTRATO.
- 7.2. La inspección de los OPV 87, su maquinaria y equipamiento será llevada a cabo por la CI durante el período de construcción a los efectos de constatar su debido progreso conforme a las disposiciones de este CONTRATO.
- 7.3. La CI deberá tener disponibilidad para concurrir al ASTILLERO CONSTRUCTOR DEL VENDEDOR EN FRANCIA donde se construirán los OPV 87, o allí donde las PARTES lo dispongan de mutuo acuerdo.
- 7.4. El COMPRADOR deberá entregar al VENDEDOR los documentos e identificaciones de los integrantes de la CI, para toda tramitación relativa al cumplimiento de su función específica.

- 7.5. Durante su desempeño en el ASTILLERO del VENDEDOR, éste deberá ofrecer a la CI, oficinas equipadas y artículos de papelería para su uso en cumplimiento del presente CONTRATO, sin costo adicional alguno. El VENDEDOR y la CI ultimarán los detalles del espacio físico y equipamiento requeridos.
- 7.6. El COMPRADOR debe garantizar que la CI concurra al ASTILLERO DEL VENDEDOR en FRANCIA durante las horas laborables ordinarias, o bien cuando se requiera su presencia, desde el comienzo de la ejecución de los trabajos de construcción mencionados en el presente CONTRATO, hasta la entrega de los OPV.
- 7.7. La CI tendrá acceso, durante horas laborables, a todas las oficinas y talleres autorizados del ASTILLERO DEL VENDEDOR en FRANCIA donde se desarrolle el trabajo relativo a la construcción de los OPV, acompañados por personal de dicho astillero y en conformidad con su reglamento. Asimismo, tendrá acceso a toda la información y planos relevantes respecto a la construcción del OPV previstos en el CONTRATO.
- 7.8. La CI tendrá acceso en forma coordinada con el VENDEDOR y durante horas laborables, a las oficinas y talleres autorizados del ASTILLERO DEL VENDEDOR en FRANCIA donde se desarrolle el trabajo relativo a la adaptación del OPV L'Adroit, acompañados por personal de dicho astillero y en conformidad con su reglamento.
- 7.9. El COMPRADOR deberá autorizar y designar como representante a la CI en todo asunto relativo al CONTRATO. No obstante, la CI no estará autorizada a aprobar o aceptar condiciones que impliquen un incremento del PRECIO CONTRACTUAL o una demora en el Plan de Entrega. Con esta salvedad y en todos los asuntos restantes, el VENDEDOR tiene el derecho y la obligación de asumir que, salvo que el COMPRADOR disponga lo contrario por escrito y así lo notifique al VENDEDOR con antelación, la CI está autorizada a actuar y responder en nombre y representación del COMPRADOR.
- 7.10. En todo momento y hasta la FECHA DE ENTREGA de los cuatro (4) OPV a ser entregados en FRANCIA, la CI estará autorizada a presenciar las PRUEBAS que se establecen en la lista de PRUEBAS definidas en el Anexo F.
- 7.11. En caso de que la CI estimase que la construcción, el material o la calidad del trabajo técnico no cumplen con los requisitos del presente CONTRATO, la CI deberá notificar el incumplimiento por escrito al VENDEDOR. Recibida la notificación, el VENDEDOR



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deberá subsanar –a su costa- el respectivo incumplimiento, salvo que considere que dicho incumplimiento es inexistente, en cuyo caso deberá recurrir al procedimiento previsto en el Artículo 19. El COMPRADOR se compromete a garantizar que la CI llevará a cabo las inspecciones conforme con los procedimientos de inspección y el cronograma acordados previamente por las PARTES en este CONTRATO. En caso de que una PRUEBA haya sido presenciada y aprobada por los representantes del COMPRADOR, no será necesaria su repetición, siempre que haya sido llevada a cabo en conformidad con los requisitos de la SC y las especificaciones del presente CONTRATO según corresponda.

- 7.12. El VENDEDOR deberá notificar a la CI, con al menos treinta (30) DÍAS de antelación de la primera PRUEBA oficial programada, lugar y fecha de las PRUEBAS de todas las máquinas y equipos. Al finalizar cada PRUEBA se presentará el correspondiente informe, que será suscripto por ambas PARTES.
- 7.13. El VENDEDOR deberá notificar por escrito con anticipación no inferior a treinta (30) DÍAS a la CI el lugar y fecha de las PRUEBAS que deberán presenciar. En caso de ausencia de la CI a las pruebas luego de recibida la notificación correspondiente, la inasistencia se considerará como una renuncia a su derecho de presenciar las PRUEBAS.
- 7.14. La CI deberá cumplir con las leyes vigentes en FRANCIA, las normas y reglamentación vigentes en los lugares de trabajo y los usos y costumbres locales.
- 7.15. A través de la CI, el COMPRADOR podrá solicitar al VENDEDOR, en cualquier momento, la presentación de informes sobre el progreso de la construcción de los OPV durante las reuniones definidas en el Anexo B.

ARTÍCULO 8. PRUEBAS

8.1 PRUEBAS HAT y SAT

- 8.1.1 El VENDEDOR preparará un programa de PRUEBAS que permitan verificar y constatar fehacientemente, que los OPV, sus partes y componentes relevantes cumplen con las especificaciones del CONTRATO. Las inspecciones y PRUEBAS de los OPV y sus equipos, maquinarias y sistemas deberán cumplir con los estándares y procedimientos aplicados por la SC. Estas PRUEBAS serán

realizadas en cada OPV 87 según lo estipulado en el Anexo F y en el OPV L'Adroit según lo estipulado en el Anexo B2.

- 8.1.2 Todos los gastos correspondientes a las PRUEBAS de los OPV serán asumidos a costa del VENDEDOR, quien, durante dichas PRUEBAS proporcionará la tripulación necesaria para los cuatro (4) OPV, a fin de cumplir con las condiciones de navegación segura. Las PRUEBAS se llevarán a cabo de la manera recomendada en las especificaciones y con el propósito de determinar el cumplimiento de las disposiciones de este CONTRATO.
- 8.1.3 El VENDEDOR será responsable del rendimiento de todos los equipos y SISTEMAS de los OPV según los estándares definidos en este CONTRATO. Se respetarán las diferentes reglas y procedimientos de la SC, según corresponda, para las PRUEBAS de los OPV, su maquinaria, equipos y sistemas.
- 8.1.4 El VENDEDOR llevará a cabo las PRUEBAS de ACEPTACIÓN en Mar (SAT) y en Puerto (HAT) de los OPV, según los procedimientos y los estándares descritos en el presente CONTRATO. Todas estas PRUEBAS se realizarán a fin de acreditar fehacientemente ante el COMPRADOR que los OPV cumplen con las especificaciones del presente CONTRATO.
- 8.1.5 Las PRUEBAS en Mar (SAT) y en Puerto (HAT) serán planificadas, programadas y llevadas a cabo por el VENDEDOR. El formato de los registros de PRUEBAS será definido por el VENDEDOR. Estos registros incluirán los procedimientos y los límites de performance detallados y serán entregados al COMPRADOR / CI por lo menos catorce (14) DÍAS antes del comienzo de cada HAT o SAT para la aprobación final del procedimiento de PRUEBAS y ACEPTACIÓN.
- 8.1.6 En caso de que, por alguna razón, el representante del COMPRADOR no pudiera asistir a las PRUEBAS luego de que el VENDEDOR haya cursado la debida notificación, éstas se llevarán a cabo sin la presencia del representante del COMPRADOR. Los informes de los resultados de las PRUEBAS serán enviados a la CI dentro de los diez (10) DÍAS de haberse efectuado.
- 8.1.7 Si las condiciones meteorológicas del día previsto para la realización de las PRUEBAS de mar no son óptimas, o si las condiciones marítimas son desfavorables durante las PRUEBAS, el VENDEDOR tendrá derecho a

posponer las PRUEBAS o parte de ellas, según crea conveniente. La demora que surja de una postergación acordada por las PARTES a raíz de condiciones meteorológicas desfavorables constituirá una "demora excusable".

- 8.1.8 Todos los incumplimientos contractuales detectados por la CI durante las PRUEBAS deberán ser corregidos por el VENDEDOR. Los costos de las medidas correctivas correrán por cuenta del VENDEDOR.

8.2 MÉTODO DE ACEPTACIÓN O RECHAZO.

- 8.2.1 Luego de completar las PRUEBAS HAT y SAT definidas en el Artículo 8.1, el COMPRADOR o la CI deberá notificar por escrito al VENDEDOR la ACEPTACIÓN o rechazo de los resultados de dichas PRUEBAS dentro de los cinco (5) DÍAS luego de haber recibido los resultados. El VENDEDOR será responsable de la rectificación –a su costa- de todas las fallas mayores o menores que se hayan detectado durante las PRUEBAS de ACEPTACIÓN de los OPV.

- 8.2.2 A su vez, si el resultado de las PRUEBAS HAT y SAT definidas en el Artículo 8.1, no cumplen con los requisitos de este CONTRATO, el VENDEDOR deberá investigar la causa y fijar las medidas adecuadas para subsanar esta situación. Asimismo deberá realizar las correcciones, alteraciones y/o nuevas PRUEBAS, según se requiera, sin acarrear costo alguno para el COMPRADOR, excepto los costos de estadía en Francia de la CI y de la tripulación. Una vez que se hayan realizado las correcciones, alteraciones o nuevas PRUEBAS, el COMPRADOR, dentro de los diez (10) DÍAS, deberá notificar al VENDEDOR por escrito la aceptación de los resultados de las PRUEBAS HAT y SAT definidas en el Artículo 8.1 o su rechazo y la justificación de dicho rechazo, teniendo en cuenta las alteraciones y las correcciones o las nuevas PRUEBAS realizadas por el VENDEDOR.

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- 8.2.3 En caso de que el COMPRADOR no cursara la notificación escrita al VENDEDOR sobre la aceptación o el rechazo de una PRUEBA HAT o SAT definidas en el Artículo 8.1 junto con la justificación dentro de los diez (10) DÍAS de finalizada, se considerará que el COMPRADOR ha aceptado dicha PRUEBA.

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8.2.4 Toda controversia entre las PARTES del presente, respecto del resultado de una o más PRUEBAS HAT o SAT definidas en el Artículo 8.1 por, según sea el caso, deberá ser resuelta de conformidad con el Artículo 19 (punto 19.2) del presente.

8.3 PROVISIONES FUNGIBLES EXCEDENTES.

8.3.1 En caso de que al momento de aceptar los OPV, en éstos quedara un remanente de combustible y/o aceites lubricantes e hidráulicos provistos por el VENDEDOR para las PRUEBAS, éstos quedarán almacenados en el/los OPV para libre uso del COMPRADOR sin cargo alguno para éste.

8.4 CONSECUENCIAS DE LA ACEPTACIÓN.

La ACEPTACIÓN de los OPV por parte del COMPRADOR enviada por escrito al VENDEDOR, de conformidad con las disposiciones precedentes, será definitiva y vinculante en lo que respecta a la conformidad de los OPV con el presente CONTRATO durante las PRUEBAS y le impedirá al COMPRADOR rechazar la ENTREGA formal de los OPV, si éstos cumplen con todos los demás requisitos de procedimiento para la ENTREGA que se establecen en este CONTRATO.

ARTÍCULO 9. CASO FORTUITO / FUERZA MAYOR.

El VENDEDOR no será responsable por incumplimientos emergentes de este CONTRATO por hechos o situaciones que afecten directamente el normal desarrollo del CONTRATO y que emanen de un caso fortuito/fuerza mayor, a saber:

- a) Situaciones de guerra, bloqueos, embargos, revoluciones, insurrecciones, movilizaciones, conmoción civil, disturbios, sabotajes, huelgas, plagas u otras epidemias, cuarentenas, tormentas de nieve, embargos de carga, terremotos, tsunamis, erupciones volcánicas, tifones, huracanes, tormentas, excepcionales altas temperaturas, inundaciones severas, sequías, o
- b) Actos de gobiernos de Autoridades nacionales o internacionales, mediante resoluciones expresas, o
- c) Una negativa de una Autoridad competente nacional o internacional, a otorgar una autorización de exportación de un suministro sensible para la construcción y/o alistamiento de los OPV. Esta negativa deberá ser demostrada ya sea, con

el documento emitido por dicha autoridad gubernamental, rechazando la solicitud de exportación o por una manifestación expresa por parte del proveedor de dicho material, poniendo de manifiesto dicho rechazo, o

- d) Cualquier otra situación fuera del control razonable del VENDEDOR, que tengan la capacidad por su magnitud de afectar de forma considerable, la producción del VENDEDOR.

De la misma manera, el VENDEDOR no será responsable por incumplimientos ocasionados por la destrucción de sus trabajos o de los trabajos de sus PROVEEDORES PRINCIPALES, ni de los OPV en parte o en su totalidad debido a las causales que encuadren en el caso fortuito / fuerza mayor precitados. Asimismo, la FECHA DE ENTREGA de los OPV de conformidad con este CONTRATO deberá extenderse – en el supuesto precitado- sin acarrear una penalidad por un plazo que no exceda la duración total de la demora. Si la demora originada en una situación de caso fortuito/fuerza mayor se prolongase por más de ciento ochenta (180) DÍAS de forma continua o discontinua, ambas PARTES podrán hacer uso de su derecho de rescisión del CONTRATO. Dicha rescisión solo podrá efectivizarse observando lo establecido en el Artículo 22.1 de este CONTRATO.

Se deja establecido, asimismo, que el VENDEDOR deberá comunicar al COMPRADOR el acaecimiento del hecho de caso fortuito/fuerza mayor y a pedido del COMPRADOR, suministrar toda la documentación que compruebe dicho acaecimiento y su posible duración, en un plazo no mayor a treinta (30) DÍAS de requerido.

En este sentido el COMPRADOR aceptará el hecho de caso fortuito/fuerza mayor solo en el caso de que el VENDEDOR aporte las pruebas suficientes de que:

- a) Se trata de un acontecimiento extraordinario e imprevisible, resultando ajeno a su voluntad.
- b) Dicho acontecimiento tiene una incidencia directa en el incumplimiento de cualquiera de las obligaciones contractuales,
- c) El VENDEDOR se encuentra impedido de subsanar la situación acaecida mediante soluciones sustitutas.

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Sin perjuicio del plazo perentorio de treinta (30) DÍAS estipulado precedentemente, ante un hecho de caso fortuito/fuerza mayor incipiente, las PARTES se obligan a reunirse a fin de analizar en forma previa al vencimiento de dicho plazo las características puntuales del caso fortuito/ fuerza mayor de que se trate, su posible prolongación en el tiempo e impacto eventual que genere en el cumplimiento del CONTRATO.

ARTÍCULO 10. GARANTÍA DE PERFORMANCE DEL VENDEDOR

- 10.1 Las PRUEBAS de velocidad serán efectuadas para constatar la velocidad máxima de los OPV. Dichas pruebas de velocidad se concretarán en aguas francesas para los cuatro (4) OPV. Deberán ser hechas teniendo en cuenta las condiciones marítimas y las condiciones acordadas para los OPV según las especificaciones del Anexo A. Si la velocidad máxima de los OPV 87 a un 80 % de MCR, medida según el procedimiento y los estándares descriptos en este CONTRATO, fuese inferior a 20 nudos, resultará aplicable la siguiente tabla de indemnización:

VELOCIDAD (Nudos)	% DE MULTA
$V \geq 19,5$	CERO
$19 <= V < 19,5$	0,25 % del precio del OPV en cuestión
$18,5 <= V < 19$	0,50 % del precio del OPV en cuestión
$18 <= V < 18,5$	0,75 % del precio del OPV en cuestión

- 10.2 En caso de que la velocidad lograda sea inferior a dieciocho (18) nudos, las PARTES acordarán las medidas que deberán adoptarse para subsanar dicha situación, pero el COMPRADOR tendrá el derecho de rechazar el OPV 87 en cuestión hasta que se llegue a una solución por mutuo acuerdo, o, a su solo criterio, optar por la rescisión del CONTRATO. El VENDEDOR deberá asumir todos los costos relacionados con dicha solución. La citada rescisión solo podrá efectivizarse observando lo establecido en el Artículo 22.2 del presente CONTRATO.

- 2 10.3 La PRUEBA de máximo alcance de los OPV 87 en función de la cantidad de combustible será realizada para constatar el alcance máximo en millas náuticas que se pueden obtener del OPV 87 a la velocidad de mínimo consumo, establecida en las especificaciones técnicas del Anexo A. Dicha PRUEBA de máximo alcance será realizada según protocolo de prueba SAT durante un período no menor a dos (2) horas

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de navegación continua y en condiciones meteorológicas normales. La progresión de los datos de consumo de combustible obtenidos en esta prueba reducida contrastados con la carga total de combustible de los OPV 87 (menos el 10% de margen de seguridad), deberán indicar cuál es el máximo alcance teórico de la unidad en las condiciones de prueba.

- 10.4 Si el alcance máximo de los OPV 87 medido según el procedimiento antes aludido y los estándares descritos en este CONTRATO es inferior a 7.000 millas náuticas, se aplicará la siguiente tabla de indemnización para cada deficiencia de alcance en el OPV 87 en cuestión:

ALCANCE (Millas náuticas)	% DE MULTA
A \geq 6.800	CERO
6.600 \leq A < 6.800	0,25 % del precio del OPV 87 en cuestión
6.400 \leq A < 6.600	0,50 % del precio del OPV 87 en cuestión
6.200 \leq A < 6.400	0,75 % del precio del OPV 87 en cuestión

- 10.5 En caso de que el alcance total calculado sea inferior a seis mil doscientas (6.200) millas, las PARTES acordarán las medidas que deberán adoptarse para subsanar dicha situación, pero el COMPRADOR tendrá el derecho de rechazar el OPV 87 en cuestión hasta que se llegue a una solución por mutuo acuerdo o a su solo criterio optar por la rescisión del CONTRATO. El VENDEDOR deberá asumir todos los costos relacionados con dicha solución. La referida rescisión solo podrá efectivizarse observando lo establecido en el Artículo 22.2 del presente CONTRATO.
- 10.6 Los porcentajes de indemnización aplicables a cada OPV 87 representan el total de monto resultante de su aplicación para este concepto, no pudiendo el COMPRADOR aplicar mayores indemnizaciones por las deficiencias de performance mencionadas en las tablas precedentes.

ARTÍCULO 11. ENTREGA DE LOS OPV

- 11.1 Luego de haber realizado las PRUEBAS de ACEPTACIÓN o sus repeticiones y la ACEPTACIÓN de cada OPV por parte del COMPRADOR, el VENDEDOR deberá entregar al COMPRADOR cada OPV en condición de "LISTO PARA OPERAR" en el ASTILLERO DEL VENDEDOR EN FRANCIA, bajo la modalidad FCA según las reglas

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INCOTERMS aplicables y de conformidad con las especificaciones y equipos descriptos en los Anexos A y B, la certificación de la SC y los certificados legales necesarios acordados por ambas PARTES. La ENTREGA de cada OPV, tal como se especifica anteriormente, se realizará ante la CI en el ASTILLERO DEL VENDEDOR EN FRANCIA, en la fecha prevista para cada OPV en el Anexo D. La transferencia de la propiedad de cada OPV tendrá lugar en el ASTILLERO DEL VENDEDOR EN FRANCIA en la fecha de su ENTREGA, según la regla INCOTERMS FCA.

11.2 MOMENTO Y MODALIDAD DE ENTREGA.

Siempre y cuando el COMPRADOR y el VENDEDOR hayan cumplido con todas las obligaciones contraídas en virtud del presente CONTRATO, la ENTREGA de los OPV será efectivizada inmediatamente con las entregas simultáneas de ambas partes del protocolo de ENTREGA y ACEPTACIÓN, mediante el cual el VENDEDOR concretará la ENTREGA de los OPV y el COMPRADOR la aceptará. El protocolo precitado deberá confeccionarse en cuatro (4) copias originales que serán firmadas por las PARTES del presente CONTRATO a través de las autoridades designadas. Si en la FECHA de ENTREGA de los OPV, éstos presentaran fallas menores que, según el criterio de la SC y de la CI, no afectasen la seguridad o el funcionamiento de los OPV, su tripulación y/o su equipamiento, el VENDEDOR tendrá derecho a proceder a la ENTREGA efectiva y el COMPRADOR se verá obligado a aceptarlos, con la condición de que luego de la ENTREGA, el VENDEDOR proceda a rectificar esas fallas y a cumplir con los requisitos de la especificación en un plazo convenido entre las PARTES dentro del periodo de garantía y por su cuenta y cargo, para lo cual en dicho supuesto el COMPRADOR deberá confeccionar un listado detallado de las distintas fallas o deficiencias encontradas en cada OPV que se adjuntará al documento que conformará el protocolo de ENTREGA a fin de que el VENDEDOR subsane dichas observaciones/ fallas/ deficiencias.

11.3 DEMORA EN LA ENTREGA DE LOS OPV.

11.3.1 DEFINICIÓN DE DEMORA PERMISIBLE.

Cualquier demora no imputable al VENDEDOR que permita la postergación de la FECHA DE ENTREGA.



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11.3.2 AVISO DE DEMORA.

Dentro de los diez (10) DÍAS de la fecha de comienzo de la demora que permita al VENDEDOR reclamar su derecho de extensión del plazo para la ENTREGA de el/los OPV, de conformidad con este CONTRATO, el VENDEDOR deberá avisar al COMPRADOR en forma fehaciente la fecha de comienzo de la demora y las razones que la ocasionaron. De la misma forma, dentro de los diez (10) DÍAS posteriores a la finalización de la demora, el VENDEDOR deberá avisar por escrito al COMPRADOR la fecha de finalización de dicha demora y especificar el periodo máximo de extensión de la FECHA DE ENTREGA de los OPV, que surgió como consecuencia de esa demora. Si el COMPRADOR habiendo sido notificado no cursa respuesta a dicha notificación dentro de los diez (10) DÍAS de haber recibido la notificación del VENDEDOR se considerará que el COMPRADOR ha desistido de su derecho a objetar dicha extensión. Si el VENDEDOR no cursara el debido aviso de demora al COMPRADOR tal como se estipula en este Artículo, el VENDEDOR no podrá solicitar extensión alguna de la FECHA DE ENTREGA y será responsable por la demora incurrida.

11.3.3 DERECHO DE RESCISIÓN POR DEMORA EXCESIVA.

Si el tiempo total acumulado de las demoras permisibles en la entrega de un OPV 87 alegadas por el VENDEDOR, incluidas las relativas a casos de fuerza mayor/ caso fortuito, sumasen en total doscientos setenta (270) DÍAS o más, continuos o discontinuados, el COMPRADOR podrá, a su solo criterio, extender el plazo de ENTREGA o rescindir este CONTRATO mediante previa notificación por medio fehaciente al VENDEDOR. La rescisión precitada solo podrá efectivizarse observando lo establecido en el Artículo 22.2. de este CONTRATO.

11.4 DOCUMENTACIÓN PARA EL COMPRADOR –ASPECTOS COMPLEMENTARIOS

La ACEPTACIÓN de los OPV por parte del COMPRADOR estará sujeta a la recepción de los documentos y certificados enviados por el VENDEDOR, según lo establecido de este CONTRATO y sus especificaciones, incluyendo la siguiente documentación y el protocolo de ENTREGA y ACEPTACIÓN mencionados anteriormente:

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- a) Protocolos de PRUEBAS HAT y SAT de los OPV confeccionados por el VENDEDOR de conformidad con las especificaciones.
- b) Protocolos de inventarios: de los equipos de los OPV, incluidos los repuestos y artículos afines, tal como se encuentra detallado en las especificaciones confeccionadas por el VENDEDOR y aceptadas por la CI.
- c) Documentación técnica final: a la FECHA DE ENTREGA de los OPV serán suministrados los PLANOS PRINCIPALES y manuales de instrucciones de los OPV, tal como se estipula en el Anexo C. Si esta documentación técnica fuese provisoria, la versión final deberá proporcionarse por el VENDEDOR al COMPRADOR dentro de los seis (6) meses computadas desde la fecha de la citada ENTREGA.
- d) Todos los certificados que deberán suministrarse con la ENTREGA de los OPV según lo estipulado en este CONTRATO y las especificaciones deberán ser emitidos por las autoridades competentes o la SC. Deberán entregarse, entonces un (1) certificado original para el OPV y dos (2) copias para el VENDEDOR. En caso de que la SC no pudiera emitir los certificados definitivos en la FECHA de ENTREGA de los OPV, el VENDEDOR entregará el certificado o los certificados provisorios emitidos por la SC al COMPRADOR, quien deberá aceptarlos, encontrándose obligado el VENDEDOR a proveer al COMPRADOR, los certificados definitivos antes de la extinción de la vigencia de dichos certificados provisorios.
- e) Declaración escrita emitida por el VENDEDOR que certifique que los OPV han sido entregados libres de derechos de retención, cargos, demandas, hipotecas u otros gravámenes relacionados con la transferencia de su propiedad del VENDEDOR al COMPRADOR. Asimismo, el VENDEDOR deberá certificar que los OPV se encuentran libres de cualquier arancel e impuestos exigidos por FRANCIA en el puerto de ENTREGA y cualquiera otra obligación que tenga el VENDEDOR con sus proveedores, empleados y tripulación y/u obligaciones que surjan de la operación de los OPV en las PRUEBAS a las que serán sometidos conforme a este CONTRATO, hasta la FECHA DE ENTREGA al COMPRADOR.
- f) FACTURA emitida por el VENDEDOR.

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- g) Cualquier otro documento que pueda ser requerido por el COMPRADOR para registrar los OPV. El VENDEDOR deberá proporcionarle al COMPRADOR, como mínimo diez (10) DÍAS antes de la FECHA DE ENTREGA, las versiones preliminares de los documentos mencionados en los párrafos precedentes.

ARTÍCULO 12. CONTROL Y GARANTÍA DE CALIDAD

- 12.1 El VENDEDOR deberá adaptar el OPV L'Adroit y construir los OPV 87 según lo estipulado en los Anexos A1 y A2, los estándares de calidad de la SC y las prácticas de construcción naval propias del VENDEDOR.
- 12.2 El VENDEDOR será responsable de controlar y garantizar la calidad de los materiales, equipos y performances previstas en este CONTRATO.
- 12.3 Antes de comenzar el trabajo de adaptación o el trabajo de construcción en los ASTILLEROS DEL VENDEDOR EN FRANCIA, éstos deberán obtener la certificación ISO 9001, en caso de que ésta no se haya renovado/certificado en el momento de comenzar con el trabajo de construcción. A los efectos de su renovación anual, esta certificación deberá ser auditada hasta la finalización del trabajo de construcción y emitida por una organización certificada a tal fin.
- 12.4 El VENDEDOR será responsable de proporcionar al COMPRADOR pruebas objetivas de que los procedimientos de control de calidad y las inspecciones se han realizado efectivamente. Para tal fin, se considerará prueba objetiva toda declaración de hechos que estén relacionados con la calidad de la mano de obra, materiales y construcción del VENDEDOR, adecuadamente fundamentadas en observaciones, mediciones o pruebas verificables.

ARTÍCULO 13. GARANTÍA TÉCNICA.

- 13.1 El VENDEDOR deberá brindar, en los términos descriptos más abajo, GARANTÍA TÉCNICA para los OPV, sus equipos y sistemas por un período de trescientos sesenta y cinco (365) DÍAS a partir de la fecha de la firma del protocolo de ACEPTACIÓN de cada OPV 87 construido, sin exceder quinientos cincuenta (550) DÍAS contados a partir de la fecha de finalización exitosa de las PRUEBAS de mar (SAT) o, por un período de ciento ochenta y dos (182) DÍAS a partir de la firma del protocolo de ACEPTACIÓN del OPV L'Adroit sin exceder trescientos sesenta y cinco (365) DÍAS contados a partir de

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la fecha de finalización exitosa de las PRUEBAS de mar (SAT), según se detalla a continuación:

13.1.1 Si durante el período de GARANTÍA TÉCNICA, cualquier parte de los OPV, incluidos el casco y/o los equipos, SISTEMAS y SUMINISTROS provistos por el VENDEDOR, no cumpliera con las especificaciones del CONTRATO debido a la ENTREGA de materiales defectuosos, que no cumplan con las especificaciones, o a la construcción defectuosa, el VENDEDOR deberá subsanar la respectiva deficiencia en el plazo perentorio menor posible, ya sea reemplazando el / los SUMINISTROS defectuosos y/o rehaciendo los trabajos que hubieran sido mal ejecutados, todo ello a su costo, según las modalidades indicadas en el Anexo B. No obstante, esta GARANTÍA TÉCNICA no incluye aquellas deficiencias o falencias causadas por o bajo las siguientes circunstancias:

- a) si el OPV y sus equipos no se han usado y protegido correctamente siguiendo las instrucciones proporcionadas por el VENDEDOR,
- b) por mal uso de piezas y/o combustibles y/o lubricantes utilizados para llevar a cabo las tareas de mantenimiento,
- c) si el COMPRADOR no ha notificado por escrito al VENDEDOR su reclamación de garantía por el medio de comunicación que fuese posible dentro de un plazo de catorce (14) DÍAS contados desde la fecha en que se tomó conocimiento de la falla / deficiencia respectiva,
- d) si los SUMINISTROS y/o cualquier parte de éstos han sido almacenados, utilizados, mantenidos, instalados, reparados o revisados de manera distinta a lo indicado en los manuales, documentación e instrucciones entregados por el VENDEDOR,
- e) si no se han registrado correctamente las actividades de mantenimiento en el CMMS suministrado por el VENDEDOR o si no se facilitan los registros del CMMS al VENDEDOR cuando éste los solicite,
- f) si el OPV defectuoso o cualquier parte del mismo han sido reparados o alterados de manera distinta a las instrucciones proporcionadas por el VENDEDOR,
- g) si el OPV o cualquier parte del mismo ha sufrido un accidente no debido a un mal funcionamiento del buque o de sus equipos. Asimismo el accidente

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debe ser de una magnitud tal que haya afectado el funcionamiento del buque y/o sus SISTEMAS,

- h) en caso de desgaste natural por uso normal,
- i) si el defecto ha sido causado total o parcialmente por un artículo defectuoso no suministrado por el VENDEDOR o no autorizado por éste para ser entregado por un tercero al COMPRADOR.

13.1.2 No se aplicará la GARANTÍA TÉCNICA sobre componentes con un ciclo de vida corta, entre ellos los materiales consumibles, excepto en los casos que los materiales defectuosos se hayan originado como consecuencia de fallas producidas por los equipos cubiertos por la GARANTÍA TÉCNICA.

13.1.3 El VENDEDOR deberá reemplazar o reparar las piezas o equipos defectuosos, siendo todos los costos involucrados en dicha reparación / reemplazo a cargo del VENDEDOR, incluidos los relacionados al transporte de ARGENTINA a FRANCIA y viceversa. Los trámites aduaneros, relacionados con la salida y el reingreso de dichos materiales, serán por cuenta del COMPRADOR.

13.1.4 APOYO LOGÍSTICO.

El VENDEDOR se compromete a brindar sostenimiento de repuestos y logística para la operación y el mantenimiento de los OPV, objeto de este CONTRATO, durante el período que cada proveedor otorgue al VENDEDOR, que será extensivo del VENDEDOR al COMPRADOR. En ningún caso este período será inferior a cinco (5) años a partir de la ENTREGA del último OPV, excepto los equipos que tendrán un compromiso de sostenimiento por el período que en cada caso se indica en el Anexo C.

En caso que el COMPRADOR requiera algún suministro o servicio logístico no previsto para los OPV, el VENDEDOR deberá efectuar una oferta técnica y comercial respecto de lo solicitado por el COMPRADOR, el cual decidirá su adquisición o no.

13.2 NOTIFICACIÓN DE DEFECTOS

El COMPRADOR deberá notificar por escrito al VENDEDOR, con la mayor brevedad posible, luego de encontrar defectos, deficiencias, fallencias o desperfectos por los que

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se puedan realizar reclamos en virtud de esta GARANTÍA TÉCNICA. La notificación por escrito del COMPRADOR deberá describir dicho defecto, falencia, deficiencia o desperfecto respectivo y la magnitud del daño ocasionado. Si el VENDEDOR encontrase materiales defectuosos o una falla en el diseño o construcción de los OPV 87 deberá notificar por escrito al COMPRADOR de inmediato. Si tales materiales defectuosos y / o fallas en el diseño o construcción de los OPV 87 se replicasen en alguno de los buques entregados al COMPRADOR, éste deberá informar de inmediato al VENDEDOR dicha circunstancia a partir de la cual, la situación acaecida deberá ser tratada como un defecto incorporado a la GARANTÍA TÉCNICA asumida por el VENDEDOR.

13.3 REPARACIÓN DE DEFECTOS

El VENDEDOR deberá reparar dichos defectos, falencias, vicios ocultos, deficiencias o desperfectos precitados y/o proceder a reemplazar las partes defectuosas de los OPV o cualquier parte de sus equipos que se encuentran cubiertos por la GARANTÍA TÉCNICA conforme a este Artículo y el Anexo B. Estas reparaciones o reemplazos, incluidos los costos del dique seco, estarán a cargo del VENDEDOR. A su vez, el VENDEDOR se hará cargo de los costos del uso del dique seco, siempre que sea indispensable para reparar los defectos o reemplazar las partes defectuosas de los OPV. Sin embargo, cuando los defectos no afectasen la operación segura de los OPV, la reparación se realizará durante la siguiente entrada en dique seco programada, incluso si no se encontrara dentro del período de GARANTÍA TÉCNICA.

No obstante, si fuese dificultoso para el VENDEDOR realizar las reparaciones dentro de un período razonable o si no pudiera enviar las partes para reemplazos y los materiales sin que se afecte o demore la operación o el funcionamiento de los OPV, el COMPRADOR podrá optar por realizar las reparaciones o reemplazos en aquellos lugares establecidos en el Anexo B, siempre que éste notifique fehacientemente al VENDEDOR (con su correspondiente confirmación escrita) la fecha, el costo estimado y el lugar de ejecución de dichas reparaciones.

El plazo máximo para esta respuesta será de cuatro (4) DÍAS HÁBILES, transcurrido el cual y ante la falta de una respuesta por parte del VENDEDOR, el COMPRADOR asumirá que el trabajo ha sido autorizado y procederá a su realización. En caso que el VENDEDOR responda negativamente al requerimiento formulado por el COMPRADOR y no asuma por sus propios medios, la reparación solicitada, el VENDEDOR será responsable por los mayores costos que la no reparación del OPV ocasione, tanto en

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daños producidos al buque, como gastos relacionados con las estadías en puerto y derechos de permanencia, todo ello dentro del marco de las responsabilidades del VENDEDOR, que se describen en el Artículo 16.

De esta forma, el VENDEDOR, mediante sus representantes, tendrá derecho a presenciar y verificar la naturaleza y la extensión de los defectos detectados, sin que esto impida o demore considerablemente las misiones o responsabilidades operativas de los OPV. En estos casos, luego de la verificación, el VENDEDOR deberá notificar por medio fehaciente al COMPRADOR la aceptación o rechazo de los defectos que pudieran estar sujetos a la GARANTÍA TÉCNICA que aquí se otorga. En otros casos menores, el INGENIERO DE GARANTÍA actuará en calidad de representante del VENDEDOR.

En las circunstancias descriptas precedentemente, el COMPRADOR solicitará al VENDEDOR la provisión de repuestos y/o servicios por un valor equivalente al monto incurrido por el COMPRADOR en la reparación.

13.4 ALCANCE DE LA RESPONSABILIDAD DEL VENDEDOR

El VENDEDOR no tendrá obligación y/o responsabilidad alguna con respecto a los defectos detectados luego del vencimiento del período de la GARANTÍA TÉCNICA especificada anteriormente. El VENDEDOR tendrá responsabilidad ante el COMPRADOR por los defectos y daños causados por cualquier defecto especificado en este Artículo. Dicha responsabilidad del VENDEDOR estará limitada a los daños ocasionados dentro del período de la GARANTÍA TÉCNICA estipulado en este Artículo. El VENDEDOR no se verá obligado a realizar reparaciones, ni será responsable por los daños causados a los OPV o a sus equipos que provengan del desgaste natural por uso normal. Asimismo, tampoco será responsable por los defectos en los OPV o en sus equipos provocados por incendios, accidentes en el mar o en otro lugar, uso inadecuado, accidentes, negligencia o dolo por parte del COMPRADOR, sus empleados, o representantes, la tripulación, los pasajeros o personas a bordo que estén realizando trabajos en los OPV distintas a las personas del VENDEDOR, sus representantes, empleados o proveedores. De la misma manera, el VENDEDOR no será responsable por los defectos que presenten los OPV, sus equipos o sus partes, como consecuencia de reparaciones o reemplazos no realizados por el VENDEDOR y/o sus proveedores, o sin previo consentimiento del VENDEDOR.

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Luego de la ENTREGA y ACEPTACIÓN de los OPV de conformidad con los TÉRMINOS Y CONDICIONES del presente CONTRATO, el VENDEDOR inmediatamente será liberado de toda responsabilidad y obligación que pudiera surgir en virtud del presente CONTRATO salvo aquellas emanadas de las GARANTÍAS constituidas y toda otra atinente al dominio y disponibilidad del buque por parte del COMPRADOR.

13.5 Las disposiciones de este Artículo constituyen la única responsabilidad del VENDEDOR relativa a la obligación de GARANTÍA TÉCNICA, excluyendo y reemplazando cualquier otra garantía disponible, conforme al presente CONTRATO o de acuerdo con la ley aplicable.

13.6 Esta GARANTÍA TÉCNICA no podrá ser extendida, modificada o alterada, salvo mediante instrumento escrito y firmado por los representantes autorizados del VENDEDOR y del COMPRADOR.

ARTÍCULO 14. INGENIERO DE GARANTÍA

14.1 Dentro del precio del CONTRATO, el VENDEDOR deberá brindar el servicio de un ingeniero, quien contará con la experiencia y la preparación adecuadas para los OPV. El ingeniero acompañará el viaje del primer OPV desde el puerto de ENTREGA en FRANCIA hasta el puerto designado en la ARGENTINA y proveerá asistencia técnica en ARGENTINA hasta el final de la GARANTÍA TÉCNICA del cuarto OPV según lo estipulado en el Anexo B.

14.2 El COMPRADOR deberá encargarse de facilitar – a su costa - oficinas equipadas, el acceso a internet y los artículos de escritorio al INGENIERO DE GARANTÍA en el lugar de asiento natural de los buques. El VENDEDOR asumirá los gastos de las llamadas telefónicas que efectúe dicho INGENIERO DE GARANTÍA.

ARTÍCULO 15. CAPACITACIÓN

15.1 Capacitación de la tripulación (capacitación para operación y mantenimiento de a bordo)

15.1.1 La tripulación del OPV L'Adroit será instruida y capacitada en los procedimientos de operación y mantenimiento de abordaje por parte del VENDEDOR, de acuerdo con lo establecido en el Anexo B2.

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- 15.1.2 Las tripulaciones de los dos primeros OPV 87 construidos en Francia, serán instruidas y capacitadas en los procedimientos de operación y mantenimiento de abordó por parte del VENDEDOR, de acuerdo con lo establecido en el Anexo E.
- 15.1.3 Los tripulantes que reciban capacitación deberán contar con al menos cinco (5) años de experiencia profesional en buques navales y habilidades en idioma inglés (comprensión y expresión oral).
- 15.1.4 La tripulación de los dos primeros OPV será designada por el COMPRADOR con la suficiente antelación para poder participar a los cursos de capacitación a ser impartidos por el VENDEDOR o por quien éste designe. El cronograma definitivo de la capacitación a ser impartida será confirmado con una antelación mínima de noventa (90) DÍAS para que el COMPRADOR envíe las tripulaciones al lugar acordado según lo indique el cronograma.
- 15.1.5 La descripción del programa de capacitación de la tripulación se encuentra agregado en el Anexo E.
- 15.2 Se brindará capacitación sobre técnicas de mantenimiento y procedimientos de apoyo logístico a un grupo de ingenieros y trabajadores calificados de los Arsenalés de la ARA. Véase Anexo E.
- 15.2.1 El COMPRADOR notificará al VENDEDOR la cantidad de personal que recibirá la capacitación, la formación que posea dicho personal y la fecha de su arribo al lugar acordado con treinta DÍAS (30) de anticipación.
- 15.2.2 Todas las personas que reciban la capacitación deberán acatar las leyes vigentes del país donde se lleve a cabo la misma.
- 15.2.3 El VENDEDOR deberá suministrar al COMPRADOR la documentación relativa a la capacitación que el primero brindará, en idioma español. La capacitación se dictará en idioma inglés.

ARTÍCULO 16. RESPONSABILIDADES POR INCUMPLIMIENTO DE CONTRATO E INDEMNIZACIONES.

- 16.1 Si una de las PARTES se encontrara en situación de incumplimiento de las obligaciones que asume en este CONTRATO, la PARTE cumplidora tendrá el derecho

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de reclamar indemnizaciones por daños y perjuicios, si resultan procedentes, dentro de los términos de este CONTRATO.

- 16.2 La responsabilidad total de cada PARTE en concepto de daños y perjuicios y asimismo, por las penalidades previstas en este CONTRATO, no podrá superar, en ningún caso, un importe equivalente al cinco por ciento (5%) del monto total contractual.

La limitación antedicha no incluye los montos dinerarios que una PARTE deberá reintegrar a la otra PARTE como consecuencia de la situación descrita en el Artículo 22.2.

La limitación anterior no resultará aplicable en los casos de negligencia grave o dolo, como tampoco, a los daños personales o muerte.

- 16.3 Cada una de las PARTES será responsable en caso de muerte o daños personales causados a su propio personal, sea cual sea la causa del evento dañoso. Las PARTES renuncian, en consecuencia, al derecho a cualquier reclamación contra la otra PARTE en este sentido, salvo si dicha muerte o daños personales son producidos por una negligencia grave o dolo de la otra PARTE.

- 16.4 Salvo lo expresamente previsto en este CONTRATO, las PARTES no serán responsables en ningún caso de daños indirectos –de cualquier especie- consistente entre otros, en pérdida de activos, pérdida derivada de interrupciones de la actividad, pérdida del crédito mercantil, pérdida de oportunidades contractuales y lucro cesante que pueda sufrir la otra PARTE.

- 16.5 En la medida de lo permitido por la ley, las obligaciones y responsabilidades del VENDEDOR y los derechos, reparaciones y obligaciones del COMPRADOR establecidos en el presente CONTRATO serán mandatorios y sustituirán cualquier otro derecho, reparación y obligación legal o de otro tipo, que no se encuentre establecida en este CONTRATO.

- 16.6 Las partes no serán responsables por incumplimientos emergentes de este CONTRATO, a causa de sentencia firme de un tribunal que impida la continuación del mismo.

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ARTÍCULO 17. GARANTÍAS BANCARIAS.

- 17.1. GARANTÍA BANCARIA POR PAGO ANTICIPADO: el VENDEDOR deberá, como requisito previo a fin de que el COMPRADOR efectúe el Pago Anticipado previsto en el Artículo 4.4.1 de este CONTRATO, constituir a favor de éste y a su entera satisfacción, una garantía bancaria en una entidad europea aceptada por el MINISTERIO DE FINANZAS de la REPÚBLICA ARGENTINA, que cubra el cien por ciento (100%) de dicho pago. La mencionada garantía será reducida durante el transcurso de la vigencia de este CONTRATO en proporción con cada uno de los pagos realizados por el COMPRADOR. El texto de esta garantía estará en un todo de acuerdo con el modelo que integra el presente CONTRATO, como Anexo I.
- 17.2. GARANTÍA BANCARIA DE FIEL CUMPLIMIENTO: dentro de los veinte (20) DÍAS contados a partir de la FECHA DE ENTRADA EN VIGENCIA DEL CONTRATO (T0) el VENDEDOR deberá constituir a favor del COMPRADOR, una garantía bancaria de fiel cumplimiento emitida por un banco europeo aceptado por el MINISTERIO DE FINANZAS de la REPÚBLICA ARGENTINA, con acuerdo del COMPRADOR, por un monto equivalente al cinco por ciento (5%) del precio contractual. La mencionada garantía será reducida durante el transcurso de la vigencia de este CONTRATO en proporción con la aceptación de conformidad por el COMPRADOR de cada uno de los OPV y de la finalización de la GARANTÍA TÉCNICA del cuarto OPV. El texto de esta garantía estará en un todo de acuerdo con el modelo que integra el presente CONTRATO, como Anexo I.

En caso que por cualquier circunstancia el presente CONTRATO fuera prorrogado, el VENDEDOR deberá extender la validez de la garantía de fiel cumplimiento precitada hasta cubrir el nuevo plazo contractual.

ARTÍCULO 18 – DISEÑO

- 18.1 Tan pronto como sea posible y antes de que transcurran sesenta (60) DÍAS de la FECHA DE ENTRADA EN VIGENCIA DEL CONTRATO (T0), el VENDEDOR deberá suministrar al COMPRADOR, un cronograma detallado sobre el desarrollo de la ingeniería, adquisición de equipos, proceso de construcción y PRUEBAS de los OPV
87. El COMPRADOR deberá formular los comentarios pertinentes sobre dicho documento tan pronto como sea posible, sin exceder los catorce (14) DÍAS posteriores a la recepción del mismo. A continuación, el VENDEDOR deberá preparar y presentar


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por escrito el documento enmendado, que incorporará los comentarios del COMPRADOR dentro de los catorce (14) DÍAS posteriores a la recepción de los comentarios formulados. Este cronograma detallado será actualizado antes de cada reunión semestral, tal como está indicado en el Anexo B.

18.2 El VENDEDOR deberá enviar al COMPRADOR y en la medida que progrese el desarrollo de la ingeniería básica (Basic Design) del proyecto, los planos y documentos técnicos del OPV 87 que surjan de este desarrollo y que son modificados con respecto al diseño existente para que el COMPRADOR los analice. El COMPRADOR deberá, dentro de un plazo de catorce (14) DÍAS, enviar al VENDEDOR su aprobación de los documentos con sus comentarios o reservas.

18.3 En el supuesto caso de que el COMPRADOR necesitara más tiempo para revisar los documentos presentados de conformidad con este Artículo, deberá solicitarlo por escrito al VENDEDOR, quien no deberá demorar su aprobación injustificadamente. Este tiempo adicional no debe superar en ningún caso el plazo de catorce (14) DÍAS posteriores a los previstos en el punto 18.2.

18.4 El VENDEDOR deberá tomar debida nota de los comentarios o reservas, si las hubiese, formulados por el COMPRADOR acerca de la documentación entregada de conformidad con este Artículo. Si dichos comentarios o reservas no fuesen de una naturaleza o de un alcance tales como para constituir una modificación o cambio en la especificación, según se encuentran definidos en el Artículo 6, luego el VENDEDOR deberá comenzar o proseguir con la construcción de acuerdo con la documentación técnica corregida por el COMPRADOR.

18.5 Si el VENDEDOR considerase que los comentarios y reservas formulados en relación con la documentación remitida por el VENDEDOR son de una naturaleza o de un alcance que constituyen una modificación o cambio en virtud del Artículo 6, el VENDEDOR deberá notificar al COMPRADOR en consecuencia y proceder de acuerdo con el Artículo 6. Si el COMPRADOR no estuviese de acuerdo, el problema deberá ser resuelto de conformidad con las disposiciones establecidas en este CONTRATO.

18.6 En el caso de que el COMPRADOR no devolviese la documentación al VENDEDOR ya aprobada, o con su aprobación, pero con comentarios o reservas, si las hubiese, dentro del plazo fijado en el punto 18.2 del presente Artículo, se considerará que dicha documentación técnica fue aprobada por el COMPRADOR.

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ARTÍCULO 19 – SOLUCIÓN DE CONTROVERSIAS

19.1 MECANISMO DE RESOLUCIÓN DE CONTROVERSIAS.

En el contexto intergubernamental de este CONTRATO, las PARTES extremarán las medidas para solucionar de manera amistosa aquellas controversias litigiosas que pudiesen derivar del mismo. Aun así, de agotarse esta vía, las PARTES establecerán de común acuerdo un mecanismo de arbitraje, tal como será definido en el CONTRATO FINANCIERO.

19.2 RESOLUCIÓN DE CONTROVERSIAS DE NATURALEZA Estrictamente TÉCNICA.

Para aquellas cuestiones específicamente técnicas, las PARTES dejan establecido que las resolverán en forma consensuada y de no obtenerse el consenso, las podrán someter para su dilucidación a la decisión de la SC prevista en el Artículo 3 del presente CONTRATO. La decisión que la SC adopte en la respectiva cuestión será definitiva y vinculante para las PARTES.

19.3 GASTOS.

En el caso de que se recurra a un arbitraje de una tercera parte, indicada en el punto 19.1, dicho árbitro deberá definir en qué proporción cada PARTE debe concurrir a sufragar los gastos que genere su intervención.

19.4 ALTERACIÓN DE LA FECHA DE ENTREGA.

En caso de someter a arbitraje disputas relacionadas con cuestiones que surjan durante la construcción y previo a la ENTREGA de cada OPV, el VENDEDOR podrá solicitar al COMPRADOR una extensión en el plazo de ENTREGA del o los OPV involucrados, hasta tanto se resuelva el diferendo sometido a arbitraje. El COMPRADOR deberá analizar si la controversia se encuentra directamente relacionada con el avance de construcción y ENTREGA del o los OPV en condición "LISTO PARA OPERAR" y/o los bienes establecidos en los Anexos B y C y su incidencia en el cronograma de ENTREGA, luego de lo cual deberá responder al VENDEDOR aceptando la prórroga requerida o proponiendo un plazo distinto.

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ARTÍCULO 20 - CESIÓN

Las PARTES no podrán efectuar cesión o transferencia a terceras partes de los derechos y obligaciones de los que son titulares y que asumen, respectivamente, por el presente CONTRATO, sin la previa autorización escrita de la otra PARTE. En consecuencia, les serán inoponibles las cesiones o transferencias realizadas por la otra PARTE sin su consentimiento escrito previo. Este consentimiento no podrá ser denegado injustificadamente.

ARTÍCULO 21 – DERECHOS DE AUTOR, MARCAS Y PATENTES

21.1 El VENDEDOR conservará la titularidad de la propiedad intelectual de los diseños, proyectos, materiales técnicos, invenciones, técnicas, procedimientos de producción y desarrollos realizados por él, relativos a los SUMINISTROS y SERVICIOS, indicados en este CONTRATO.

Nada de lo incluido en el CONTRATO se interpretará como un traspaso legal o una transferencia de licencias salvo lo indicado en este Artículo de ninguna patente, modelo de utilidad o diseño, derechos de autor, marca de producto, know-how, técnica u otros derechos de propiedad intelectual o industrial, correspondientes al VENDEDOR.

21.2 Sin el previo consentimiento por escrito del VENDEDOR el COMPRADOR no podrá transferir a terceros el uso de los planos de diseño, protocolos o documentación técnica de este CONTRATO, sin perjuicio de su uso personal.

21.3 La maquinaria y los equipos de los OPV podrán llevar el número de patente, las marcas registradas y los nombres comerciales de los fabricantes. El VENDEDOR se obliga a mantener indemne al COMPRADOR de cualquier responsabilidad demostrada de que el VENDEDOR ha hecho mal uso de patentes de terceros o por demandas referidas a la violación de dichas patentes.

21.4 Ninguna de las disposiciones del presente CONTRATO podrá entenderse como la transferencia de patentes, derechos de marcas o derechos de autor de los equipos utilizados en virtud del presente CONTRATO. Estos derechos se reservan exclusivamente a sus propietarios verdaderos y legítimos.

21.5 El VENDEDOR concede al COMPRADOR una licencia no exclusiva e intransferible para el uso de los OPV y de los SUMINISTROS que se le efectivizarán por este CONTRATO.

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ARTÍCULO 22 - RESCISIÓN.

22.1 RESCISIÓN POR CASO FORTUITO/FUERZA MAYOR

En caso de que se produzca algún acontecimiento de caso fortuito/fuerza mayor de acuerdo a lo descrito en el Artículo 9 de este CONTRATO, las PARTES se reunirán para decidir en qué condiciones resulta posible continuar el CONTRATO y, si no llegasen a un acuerdo en el plazo de treinta (30) DÍAS, cada una de las PARTES estará autorizada a rescindirlo. Las PARTES deberán determinar las consecuencias de dicha rescisión y la eventual obligación de reintegro entre las PARTES. Las PARTES deberán limitar equitativamente los resarcimientos económicos derivados de la rescisión, sin derecho por ninguna de las PARTES a reclamar indemnización de ningún tipo a la otra PARTE.

22.2 RESCISIÓN POR INCUMPLIMIENTO

Cualquiera de las PARTES podrá rescindir total o parcialmente el presente CONTRATO por incumplimiento de la otra PARTE. La PARTE que pretenda rescindir el CONTRATO, deberá previamente a adoptar esa medida, notificar en forma fehaciente a la otra PARTE, con al menos sesenta (60) DÍAS de anticipación su decisión a los efectos de que la PARTE incumplidora tome todos los recaudos a su alcance para cumplir con su obligación y sin que ello signifique aceptación alguna de prórroga, respecto de los plazos establecidos en el CONTRATO.

En caso de rescisión por incumplimiento, se aplicará lo siguiente:

En caso de incumplimiento del VENDEDOR:

- a) El VENDEDOR estará autorizado a entregar los SUMINISTROS y SERVICIOS que se encuentren en condiciones de ENTREGA según las previsiones del presente CONTRATO, pagándose el precio correspondiente a los mismos.
- b) El VENDEDOR devolverá al COMPRADOR todos los BFE, definidos en el Anexo B, que queden en sus instalaciones.
- c) El VENDEDOR reembolsará al COMPRADOR el importe proporcional del Pago Anticipado y cualquier otro pago efectuado por el COMPRADOR que no haya tenido una contraprestación acorde a lo establecido en este CONTRATO, y
- d) El COMPRADOR podrá reclamar la indemnización por daños y perjuicios, si procede, con los límites establecidos en este CONTRATO.

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En caso de incumplimiento del COMPRADOR:

- e) El COMPRADOR reembolsará al VENDEDOR todos los costos incurridos por éste, como consecuencia de la rescisión, especialmente aquellos referidos a: materias primas, mano de obra, almacenamiento, justificados mediante documentación fehaciente, asumidos por el VENDEDOR.
- f) El VENDEDOR podrá reclamar la indemnización por daños y perjuicios, si procede, con los límites establecidos en este CONTRATO.
- h) el VENDEDOR estará autorizado a conservar cualquier pago ya efectuado por el COMPRADOR hasta que se llegue a un acuerdo acerca de lo anterior o se haya aplicado una resolución al conflicto y se haya tomado una decisión en consecuencia.

ARTÍCULO 23 – DESPACHO DE PERSONAL – CEREMONIAS.

- 23.1 El COMPRADOR podrá designar personal para asistir a ceremonias como, por ejemplo, la ceremonia de comienzo del proyecto, de botadura, de ENTREGA, entre otras, las cuales serán coordinadas oportunamente entre el VENDEDOR y el COMPRADOR.
- 23.2 Por lo menos treinta (30) DÍAS antes de las ceremonias respectivas, el VENDEDOR deberán avisar al COMPRADOR la fecha y el lugar de cada evento. A su vez, el COMPRADOR informará al VENDEDOR si podrá asistir al evento o no. En caso afirmativo, el COMPRADOR deberá enviarle al VENDEDOR la lista de los nombres y apellidos y la información adicional necesaria de quienes asistirán, con quince (15) DÍAS antes del pertinente evento.
- 23.3 Los costos incurridos por el personal designado para asistir a las ceremonias correrán por cuenta del COMPRADOR.

ARTÍCULO 24 - CONFIDENCIALIDAD

- 24.1 Tanto el VENDEDOR como el COMPRADOR se obligan a adoptar las medidas de seguridad necesarias para proteger la información y los datos relacionados con el objeto de este CONTRATO.

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24.2 Ambas PARTES acuerdan que la información relacionada con el alcance del presente CONTRATO será manejada con carácter confidencial y no será divulgada a terceras partes, u otras personas, agencias o terceros gobiernos. Asimismo, convienen en que:

24.2.1 Toda la información deberá estar protegida bajo la normativa de protección de información de cada PARTE.

24.2.2 Ninguna persona que no haya sido expresamente autorizada por ambas PARTES podrá tener acceso a la información confidencial precitada sin el previo consentimiento escrito de ambas PARTES, excepto en lo inherente a la información necesaria a los proveedores del VENDEDOR.

24.2.3 Ambas PARTES acuerdan que la información clasificada deberá ser protegida bajo las reglas de protección de sus respectivos gobiernos. Con este propósito un documento de seguridad internacional, definiendo las informaciones clasificadas y sus niveles de clasificación será firmado por una persona habilitada por el VENDEDOR y un funcionario de la ARA dentro de un plazo máximo de noventa (90) DÍAS contados a partir de T0.

ARTÍCULO 25 – FECHA DE ENTRADA EN VIGENCIA DEL CONTRATO

25.1 El CONTRATO entrará en vigencia una vez que se hayan cumplido las siguientes condiciones:

- a) Firma de ambas PARTES.
- b) Aprobación del CONTRATO por parte de las autoridades competentes de la REPÚBLICA ARGENTINA.
- c) Notificación por el COMPRADOR de la firma del CONTRATO FINANCIERO por parte de el o los bancos designados por el VENDEDOR y las autoridades competentes de la República Argentina, que otorga el crédito para la adquisición de todos los SUMINISTROS y SERVICIOS establecidos en este CONTRATO.
- d) Recepción por el VENDEDOR del certificado de usuario final emitido por el VENDEDOR y firmado por el COMPRADOR, según un modelo del Anexo G.

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e) Que el VENDEDOR haya recibido el Pago Anticipado previsto en el Artículo 4, previa constitución de la garantía bancaria prevista en ese mismo Artículo y según modelo del Anexo I.

25.2 La fecha de comienzo del proyecto será la FECHA DE ENTRADA EN VIGENCIA DEL CONTRATO y se lo referirá como T0.

25.3 El PRECIO CONTRACTUAL será válido hasta el 30 de junio de 2018. No obstante, desde la fecha mencionada precedentemente, el presente CONTRATO mantendrá su validez en forma automática por el término de sesenta DÍAS adicionales, contados a partir de dicha fecha, salvo que alguna de las PARTES comunique a la otra en forma fehaciente, su decisión en contrario.

En caso que alguna de las condiciones establecidas en los puntos b) a e) del art. 25.1 no se cumplieran antes del 31 de octubre de 2018, este CONTRATO será considerado nulo de nulidad absoluta y sin consecuencias ni efectos de ninguna naturaleza para ninguna de las PARTES.

Las PARTES, de común acuerdo podrán prorrogar, mediante un documento escrito, el plazo estipulado precedentemente por un período adicional, que las mismas convengan.

ARTÍCULO 26 – IMPUESTOS Y DERECHOS

26.1 IMPUESTOS.

26.1.1 Todos los impuestos, tasas y /o contribuciones o cualquier otro gravamen en caso de haber alguno, incurridos por el VENDEDOR y sus proveedores de cualquier rango en el territorio de la REPÚBLICA FRANCESA en razón del presente CONTRATO, para la libre disponibilidad por parte del COMPRADOR de los OPV, correrán por cuenta y cargo del VENDEDOR.

26.1.2 Todos los impuestos, tasas y /o contribuciones o cualquier otro gravamen en caso de haber alguno, incurridos por el VENDEDOR en el territorio de la REPÚBLICA ARGENTINA en razón del presente CONTRATO exclusivamente relativos a la libre disponibilidad por parte del COMPRADOR de los OPV y sus SUMINISTROS, correrán por cuenta y cargo del COMPRADOR.

Para el eventual ingreso de materiales y/o repuestos para los OPV al territorio de la REPÚBLICA ARGENTINA, el COMPRADOR estará a cargo de los trámites aduaneros relacionados con dichos SUMINISTROS.



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ARTÍCULO 27 - IDIOMA

Toda la documentación mencionada en los Anexos de este CONTRATO provista por el VENDEDOR al COMPRADOR deberá estar escrita en el idioma que para cada caso se establece en el Anexo B.

ARTÍCULO 28 – INTERPRETACIÓN

28.1 LEGISLACIÓN APLICABLE.

Las PARTES del presente acuerdan que la validez y la interpretación de este CONTRATO y de cada una de sus disposiciones deberán estar regidas por la legislación de la REPÚBLICA ARGENTINA.

28.2 DISCREPANCIAS.

En caso de que se produzca alguna discrepancia en la interpretación del CONTRATO respecto de lo establecido en el cuerpo principal de este y todos o algunos de los Anexos agregados al mismo, tendrá preeminencia y validez lo estipulado en el cuerpo principal del CONTRATO.

En el caso de que existan discrepancias entre lo establecido en las especificaciones técnicas y los planos, lo indicado en las especificaciones técnicas prevalecerá sobre lo indicado en los planos. En caso de discrepancias entre los Anexos de este CONTRATO, estos tendrán el mismo rango de prevalencia.

ARTÍCULO 29 – INTEGRALIDAD DEL CONTRATO.

29.1 El presente CONTRATO, junto con todos sus Anexos, representa el acuerdo integral entre las dos PARTES y reemplaza a toda otra comunicación o convenio oral o escrito efectuado con anterioridad.

29.2 Este documento que contiene los TÉRMINOS Y CONDICIONES del CONTRATO ha sido firmado por los representantes del COMPRADOR y del VENDEDOR y su entrada en vigencia se encuentra sujeta al cumplimiento de las condiciones previstas en el Artículo 25.

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ARTÍCULO 30 - DOMICILIO LEGAL

A todos los efectos legales que pudieran derivarse de la ejecución y cumplimiento del presente CONTRATO, las PARTES fijan sus domicilios en los lugares indicados más abajo en los cuales surtirán efecto todas las notificaciones y comunicaciones que se practiquen durante su vigencia.

30.1 COMPRADOR: ARMADA ARGENTINA – ESTADO NACIONAL ARGENTINO

Domicilio: Comodoro PY, 2055 – CABA (CP 1104) REPÚBLICA ARGENTINA

Teléfono: +54 11 4317 2412

Correo electrónico: dfburden@armada.mil.ar

VENDEDOR: NAVAL GROUP

Domicilio: 40-42 rue du Docteur Finlay, 75015 PARIS FRANCIA

Teléfono: +33 1 40 59 50 00

Correo electrónico: olivier.michel@naval-group.com

30.2 En caso de que una de las PARTES realice cambio de domicilio, deberá comunicarlo a la otra PARTE mediante carta certificada. Si no se cursara dicha notificación de cambio, las comunicaciones se enviarán al último domicilio conocido.

30.3 Todo lo relativo a notificaciones, solicitudes, demandas, instrucciones, asesoramiento y comunicaciones de conformidad con el presente CONTRATO se considerarán válidas y entregadas al momento de envío al domicilio de la PARTE de la mencionada carta certificada conjuntamente con un correo electrónico con el mismo contenido textual. Siempre que el servicio de correo elegido pueda entregar dichas comunicaciones dentro de los diez (10) DÍAS subsiguientes a la fecha de envío. Los mensajes enviados por fax y los documentos escaneados enviados por correo electrónico se considerarán entregados en la fecha de su transmisión siempre que sea día hábil en el lugar de destino; de lo contrario, se considerarán recibidos el día hábil siguiente.

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ARTÍCULO 31 – LISTADO DE ANEXOS

Los siguientes Anexos se incluyen como parte integrante del CONTRATO.

A	Descripciones Técnicas (Technical Descriptions or TD)
	A1 - OPV 87: Technical Description (Descripción Técnica)
	A2 - OPV L'Adroit: Descripción Técnica
B	Alcance de los Trabajos (Statement of Work or SOW)
	B1 - OPV 87: Alcance de los Trabajos (Statement of Work)
	B2 - OPV L'Adroit: Alcance de los Trabajos (Statement of Work)
C	OPV 87: Soporte Logístico Inicial (Initial Logistic Support or ILS) Initial Logistic Support (Complement)
D	OPV 87: Cronograma general y etapas de construcción (Master schedule and stages of construction)
E	OPV 87: Plan de Capacitación (Training Plan)
F	OPV 87: Pruebas de Aceptación (Acceptance Tests HAT and SAT)
G	Certificado de usuario final (End User Certificate)
H	Modelo de Certificado de Aceptación
I	Modelos de garantías bancarias

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ARTÍCULO 32 – CONFORMIDAD.

En prueba de conformidad, previa lectura y ratificación, se firma el presente CONTRATO en dos (2) ejemplares de 318 fojas cada uno (incluyendo sus Anexos), de un mismo tenor y a un solo efecto, en el lugar y fecha indicados precedentemente.

POR EL COMPRADOR:

ESTADO MAYOR GENERAL DE LA ARMADA ARGENTINA.



Nombre: VICEALMIRANTE DE INFANTERÍA DE MARINA Dn. JOSÉ LUIS VILLÁN.

Cargo: JEFE DEL ESTADO MAYOR GENERAL DE LA ARMADA ARGENTINA.

POR EL VENDEDOR:

22 JUN 2018


NAVAL GROUP



Nombre: Sr. OLIVIER MICHEL.

Cargo: VICEPRESIDENTE DE VENTAS PARA AMÉRICA LATINA DE NAVAL GROUP.

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Anexo A1 3 OPV 87 for the Armada Argentina



Technical Description



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000 - General Guidance and Administration

001 – Foreword

This document is a technical description of the OPV 87 as proposed by NAVAL GROUP (Seller) to best satisfy the requirements of the Argentinian Navy (Buyer).

All figures in the document are for illustration only. There are not contractual.

The ship is built and delivered in accordance with the requirements of the regulations of the Classification Society retained and specified in this document.

The Seller reserves the right to apply any modifications necessary to the project, during both the development and the production process, in accordance with the provisions of the Contract after agreement.

It is specified that in every case where the same item is mentioned several times in this document, only one item of equipment will be supplied or mounted on board, unless it is clearly mentioned that a multiple supply will be made.

If more than one ship has to be built in accordance with this specification, the subsequent ship(s) will be compliant and their performances, construction capacities, engines and equipment will be as near to identical as possible. However, if the equipment is modified for the subsequent ships of the series, due to improvements by the manufacturer, the Seller will then be authorized to use this improved equipment.

In the event of inconsistency between the contents of this specification and its appendices, the contents of this specification shall take precedence.

002 – Ship's Mission

The ship is designed to fulfill missions in economic zones, territorial waters and high seas (potentially covered with first year ice), with activities ranging from public service missions to sea control operations such as:

Public Service Missions:

- Rescue operations in the event of a disaster relief;
- Humanitarian aid;
- Civilian evacuation operations: Supports the safe and quick evacuation of civilians from an area where they could be exposed to a threat;
- Search and Rescue operations (SAR).

Order Keeping Missions:

- Maritime rescue;
- Fighting terrorism;
- Fighting acts of piracy;
- Aid/support for civil authorities: bringing military assistance authorised by the law to communities or civil authorities in the event of civil disturbance (for example riots, mass demonstrations) and quarantining operations;

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- Safety of maritime navigation:
 - Support in safety checking ships;
 - Support in controlling maritime traffic;
- Preservation of the environment: applying the legislation on the protection of living resources of the sea (regulation of fishing);
- Border Control:
 - Fight against drug trafficking;
 - Fight against smuggling;
 - Prevention of illegal immigration.

Maritime Control Operations:

- Information;
- Identification and acquisition of targets: systematic observation of zones, places, persons, objects and targets to monitor any change or movement of military significance. This mission involves supporting military operations from the point of view of strategic, operational and tactical information in the following areas:
 - Indications and alerts;
 - Planning and employment;
 - Evaluation;
- Embargos & blockades;
- Enforcing economic sanctions;
- Peace Support Operations:
 - Keeping the peace: following and facilitating the enforcement of an agreement (for example, ceasefire, truce)
 - Peace enforcement: use of military force to impose compliance with resolutions or sanctions (intervention, separation of belligerents by force and monitoring exclusion zones).

The qualities of the seakeeping, propulsion system and Combat System of the patrol vessel enable her to also undertake the following actions:

- Search, interception and inspection of ships and taking repressive measures;
- Marking or countermarking suspect or enemy ships;
- Harassing a ship; and
- Neutralizing a ship.

The innovations incorporated in the ship - unusual for a ship of this size - endowing her with both technical and operational superiority are:

- A bridge with a panoramic view which optimises maritime safety actions and gives an overall view on the helicopter deck and on the aft RHIB launching ramp;
- A single mast giving 360° coverage of the integrated sensors;
- Two aft ramps for rapid launch and recovery of two 9 m class RHIBs; and
- The POLARIS® Combat Management System, especially designed for this type of military ships and used to compile the tactical situation, to exchange tactical data with other units, and to operate the weapons systems (if integrated to POLARIS®).

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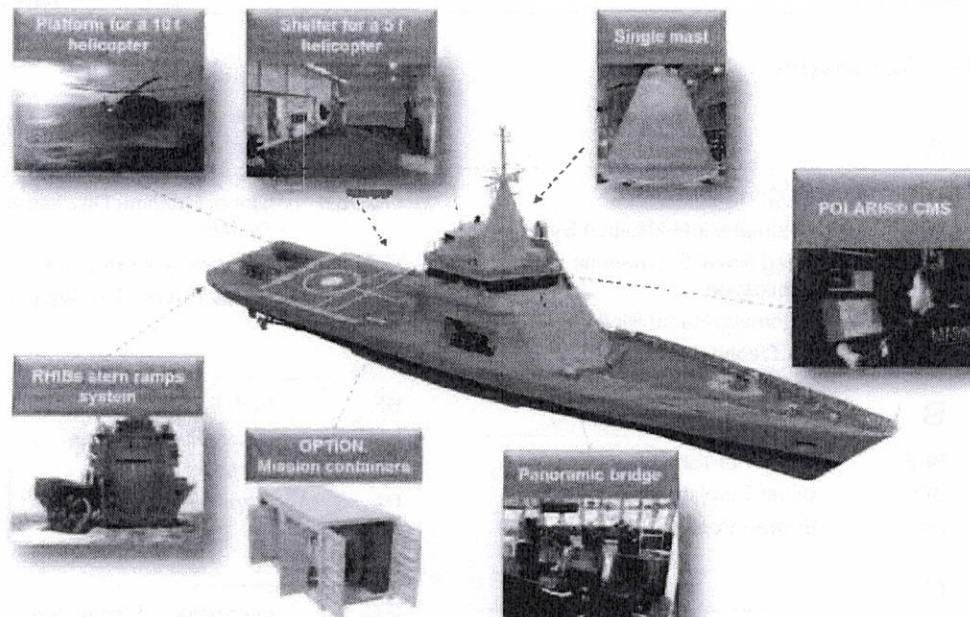


Figure 1 Key Features of OPV 87

040 – Definitions and General Administrative Requirements

040 - Definitions

Definition of the terms used in this specification:

Ship	Means the whole warship as described in this technical specification
Shipyards	Means the naval shipyard that builds the ship in accordance with the description in this document
Construction standards	Means the standards and methods of construction implemented in the construction of the ship
Buyer	Means the purchaser of the ship
Seller	Means the company retained by the Buyer for the supply of the ship (NAVAL GROUP)
Or equivalent	indicates an item (equipment component or material) that can be replaced by another item of the same quality of from another supplier.
Optional	Means equipment or an installation not supplied as standard but offered as an option.

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041 - Acronyms

A

ACU	Air Conditioning Unit
AIS	Automatic Identification System
ANEP	Allied Naval Engineering Publication
ARPA	Automatic Radar Plotting Aid
ATU	Air Treatment Unit

B

BFE	Buyer Furnished Equipment
BFI	Buyer Furnished Information
BV	Bureau Veritas

C

CCTV	Closed Circuit Television
CMS	Combat Management System
COLREG	COLlision REGulations
COTS	Commercial Off-The-Shelf
CPO	Chief Petty Officer
CPP	Controllable Pitch Propeller
CR	Control Room

D

DAD	Diesel And Diesel
DG	Diesel Generator
DGPS	Differential Global Positioning System

E

ECDIS	Electronic Chart Display and Information System
EEZ	Exclusive Economic Zone
EM	Electromagnetic
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
ENC	Electronic Navigational Chart
EOW	Engineer Officer of the Watch

F

FDO	Flight Deck Officer
-----	---------------------

G

GMDSS	Global Maritime Distress & Safety System
GMT	Greenwich Mean Time
GPS	Global Positioning System

H

HF	High Frequency
HMG	Heavy Machine Gun
HP	Horse Power
Hs	Significant wave height

I

IEC	International Electrotechnical Commission
IFF	Identification Friend or Foe
IMM	International Maritime Mobile
IMO	International Maritime Organization
INMARSAT	International MARitime SATellite
INU	Inertial Navigation Unit
IR	InfraRed
ISO	International Standard Organization

L

LP	Low Pressure
----	--------------

M

MCG	Main Caliber Gun
MCP	Maximum Continuous Power
MED	Marine Equipment Directive
MFC	Multi-Function Console
MMI	Man Machine Interface
MP	Medium Pressure
MWB	Main Watertight Bulkhead

N

NATO	North Atlantic Treaty Organization
NM	Nautical Mile


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O

OOW Officer Of the Watch
OPV Offshore Patrol Vessel

P

PLC Programmable Logic Controller
PMS Platform Monitoring System
PTO Power Take-Off
PwMS Power Management System

R

RAS Replenishment At Sea
RHIB Rigid Hull Inflatable Boat

S

SAR Search and Rescue

SCA Small Caliber Arm
SOLAS Safety Of Life At Sea
SWBS Ship Work Breakdown Structure
SWL Safe Working Load

U

UMS Universal Measurement System

V

VIP Very Important Person
VMC Visual Meteorological Conditions

W

WTB WaterTight Bulkhead

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042 - Documentary Breakdown Structure

The system of numbering SWBS (Ship Work Breakdown Structure) is used as a guide in this specification.

043 - General Administrative Requirements

0431 - Buyer Furnished Equipment (BFE)

Equipment mentioned in this document as BFE is supplied by the Buyer.

Mass and volume requirements of BFE are taken into account by the Seller so that these BFE can be incorporated. The other characteristics required for integration of BFE, which could impact development margins, are not taken into consideration. Where applicable, BFE shall be delivered with their connectors, specific cables, and special tools (one set for each Ship).

The final list of BFE is established before signature of the contract.

0432 - Choice of Equipment

The supplier's make and part number given in this document are mentioned for the sole purpose of indicating the limits of supply and quality of the ship. The Seller is free to use other equivalent suppliers.

If the Buyer wishes to impose a specific supplier other than the one specified in the Contract, and if the choice involves changes in the cost, delivery or performance, the Buyer will be informed of this. If the Buyer confirms his choice, he must notify the Seller in writing of his decision. Such notification shall be made before T0+2 and, once agreed on the consequences, shall be included in an Amendment to the Contract.

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050 - Ship System Performance

051 – General Characteristics

0511 - Main Characteristics

• Length overall.....	87.0 m
• Length at waterline.....	81.7 m
• Beam overall.....	13.6 m
• Beam at waterline.....	11.8 m
• Depth.....	7.55 m
• Design Draught.....	3.4 m
• Max Draught.....	4.2 m
• Full load displacement.....	1,650 t
• Crew (typical).....	40
• Accommodation capacity (crew + special personnel).....	59
• Speed.....	20 knots @ 80%MCR
• Propulsion.....	DAD/2x 3.5 MW
• Stabilization.....	Active type (with fins)
• Endurance.....	30 days for 40 people
• Range.....	> 7,000 nm at 12 knots
• RHIBs.....	2x 9 m
• Flight deck.....	Class 10 t
• Helicopter hangar.....	Dauphin N3+

The values indicated for the dimensions and the displacement are approximated. The as built values may slightly differ.

The OPV 87 is distinguished by her design which incorporates a single mast developed using NAVAL GROUP experience which, in operation with L'Adroit in the French Navy, making this design an operationally effective "Sea proven" system.

This innovative design builds on all the experience acquired and mastered by NAVAL GROUP in the field of composite materials in the marine environment associated with a high level of integration of mission and navigation equipment in the mast.

The principal advantages of this single mast design are:

- 360° coverage for surveillance radar;
- Panoramic view from the bridge;
- Increased availability of the equipment, protected by the radar dome.

The rotating surveillance radar of the OPV 87 features an X-band antenna (refer to 450 - Surveillance Systems (Air and Surface)).

OPV 87 single mast consists of:

- A composite radome housing the surveillance radar antenna;
- A mast pole fitted with navigation radar, navigation system sensors, and communication antennas.

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The materials of the radome have been selected by NAVAL GROUP to ensure excellent resistance to the marine environment (humidity, UV), and temperature while guaranteeing a low thermal expansion and transparency to the frequency bands used.

The electronics bays associated with the antennae are located in the technical area just below the single mast.

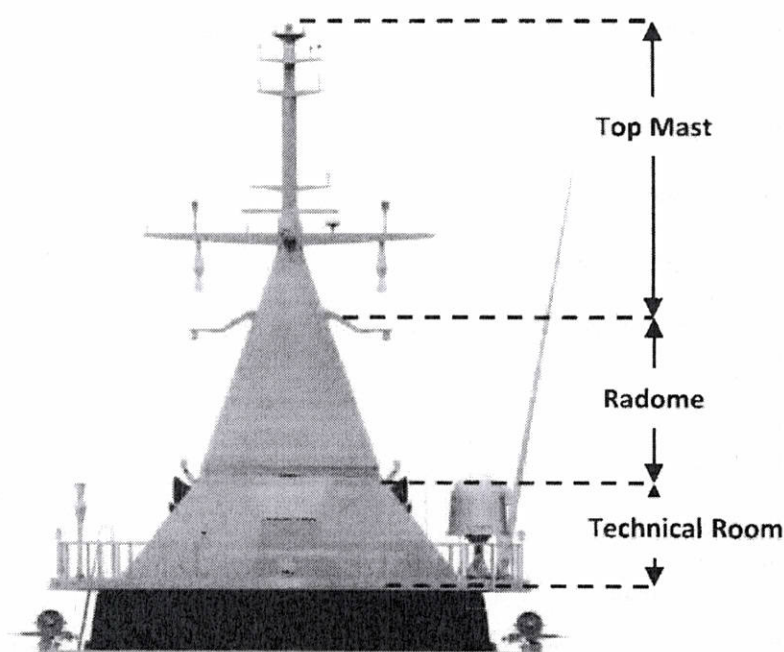


Figure 2 Single Mast Arrangement

0512 - Combat System

The ship is equipped with a Combat System able to perform the following functions:

- Identification of targets;
- Computation of the tactical situation based on information from the on-board sensors;
- Communication (voice and data) with other civil and military authorities;
- Exchange of the tactical data with other units;
- Protection of the ship against asymmetric threats; and
- Progressive engagement of weapons from non-lethal to Main Gun.

The Combat System includes the following equipment:

Management System

- CMSPOLARIS ®/NAVAL GROUP
- Tactical Data Link NIDL ®/NAVAL GROUP



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Surveillance Sensors:

- Surveillance radarScanter 6002/TERMA
- IdentificationADSB
- Navigation radars One X-band and one S-band/COTS
- Thermal imaging systemVigy Engage/SAFRAN
- Identification AIS, IFF Transponder

Weapons Systems:

Main gun 30 mm MARLIN-WS/LEONARDO

Heavy Machine Guns 2x 12.7 mm remotely operated Sea Rogue/REUTECH

Non-lethal weapons 2x water guns

Other Systems:

- Operational Communications
 - 1x HF/UHF/VHF suite
 - 1x Inmarsat SATCOM
 - 1x VHF ICAO
- Inertial navigation unit 1x INU

The architecture of the Combat System is shown in the following diagrams:

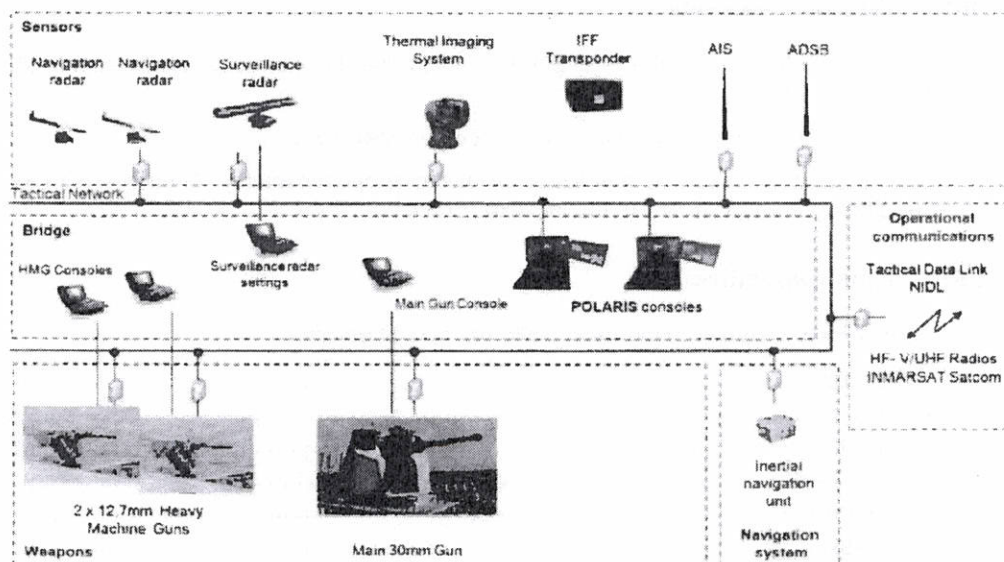


Figure 3. Combat System Architecture.

Connection of equipment to the Combat Management System is made through an Ethernet tactical network.

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An overall view of the Combat System on the ship is given in the next illustration.

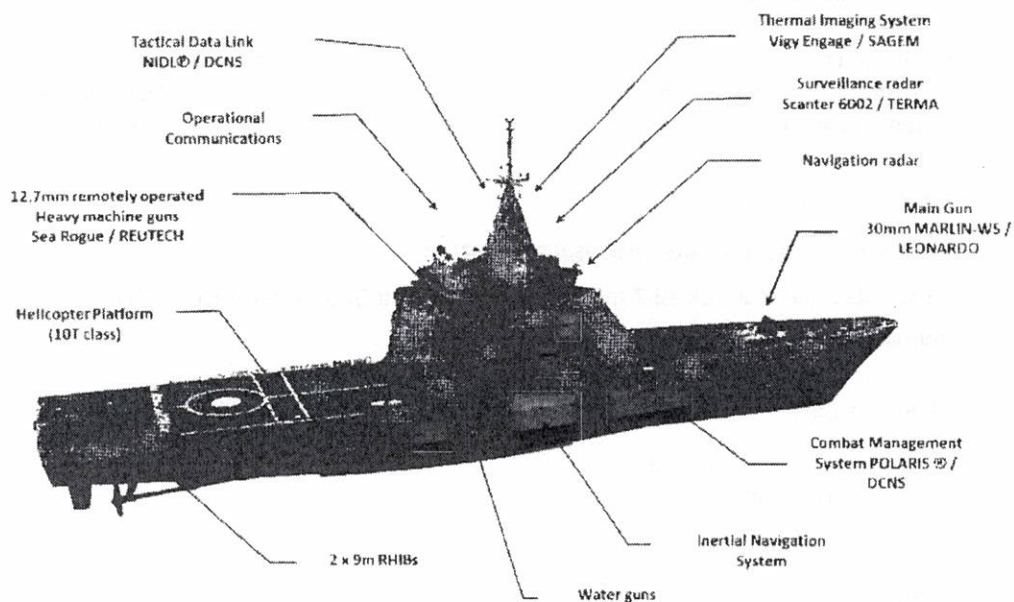


Figure 4. Overall View of the Combat System

0513 - Mission Flexibility

Two containers, of maximum weight 10 T each, can be lashed on the fore part of the flight deck (deck 01).

Containers' carrying is exclusive from helicopter operations.

Containers can provide anti-pollution or diving support capacity. Their main characteristics are described in § 666 of this technical description.

0514 - Tank Capacities

Approximate volumes of the main tanks are given hereafter:

• Fuel oil	280 m ³
• Dirty oil	4 m ³
• Oil storage oil	4 m ³
• Fresh water	40 m ³
• Grey water	13 m ³
• Sludge	2.6 m ³
• Water Ballasts	60 m ³
• JA-1	11 m ³

The tank capacities mentioned above are maximum theoretical net capacities.

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0515 - Speed

The maximum speed is 20 knots calculated under the following conditions, based on ISO Standard 3046/1:

- Clean hull and propellers;
- Propulsion equipment adjusted to 80% MCR (maximum continuous rating);
- Sea State 3 (SH = 0.88 m);
- No wind;
- Reference trials displacement 1,500 t;
- Air temperature 25°C max;
- Sea water temperature 25°C max;
- Salinity: 1.025 g/l;
- Deep water (> 50 m)

0516 - Range

The range of the ship is not less than 7,000 nautical miles at the economical speed of 12 knots. This range is calculated using the maximum Fuel oil capacity with 10% reserve, including the service tanks, and under the following conditions, based on ISO Standard 3046/1:

- Clean hull and propellers;
- Sea State 3 (SH = 0.88 m);
- Reference trials displacement 1,500 t
- Air temperature 25°C max.;
- Sea water temperature 25°C max.;
- Salinity: 1.025 g/l
- Deep water (> 50 m)

0517 - Endurance

The ship has sufficient capacity to conduct autonomous operations for at least 20 days with 59 persons on board, or 30 days with 40 persons on board.

0518 - Crew

The nominal crew size for OPV 87 is 40 persons.

The ship features accommodation for 19 additional persons permitting for example accommodating additional crew, or aviation detachment.

Accommodation is therefore provided for 59 persons distributed in various types of cabins, as described below:

• Commanding Officer cabin	1x 1
• Single cabins	4x 1
• 2-berth cabins	3x 2
• 4-berth cabins	4x 4
• 6-berth cabins	2x 6
• 10-berth cabins	2x 10
• Total	59

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070 - General Requirements for Design and Construction

0701 - Environmental Conditions

The Ship is designed for use in the following external climatic conditions:

Seawater Temperature: 1°C to +34°C

External Air Temperature: -10°C to +35°C

Relative Humidity: Max 70% RH at 35°C

0702 - Classification

The Ship is designed, built, equipped, tested and delivered to the Buyer in accordance with the conditions stipulated in this document and the applicable regulations for "BV Rules for classification of steel ships" NR467, 2016 edition. The design and construction of the ship are supervised by BUREAU VERITAS.

The ship complies with the following classification notations:

- I * HULL * MACH
- Offshore Patrol Vessel
- Unrestricted Navigation
- ICE CLASS IC
- AUT-UMS
- CLEANSHIP

0703 - Regulations and Certificates

The ship complies with the following regulations:

- Adoption of the International Code on Intact Stability, 2008 MSC 267 (85) Code IS 2008;
- COLREG;
- Load Line International Convention;
- MARPOL Convention - Annexes I, IV, V and VI;
- Anti-fouling system and regulation Convention;
- International Tonnage Convention;
- GMDSS (Global Maritime Distress and Safety System), zone A3.

The following military standards are considered:

- ANEP 24 for accommodations;
- NAVAL GROUP military standards for systems (aviation, ammunition storage) not covered by the classification society.

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All relevant certificates required by class and/or authorities are delivered, comprising:

- Class certificate for the ship in accordance with the defined annotation concerning, amongst other things, the following subjects:
 - Pollution prevention;
 - Fire protection;
 - Navigational safety;
 - The electrical installation;
 - Lifting equipment (ILO 152 Convention);
 - Stability experiment report.
- Panama tonnage certificate;
- International Tonnage certificate 69;
- Load line certificate;
- SOLAS certificates:
 - SOLAS safety construction;
 - SOLAS safety radio;
 - SOLAS safety equipment.
- MARPOL Annex I Engine;
- MARPOL Annex IV Garbage certificate;
- MARPOL Annex V Sewage certificate; and
- MARPOL Annex VI Air Pollution.

The navigation authorization under Argentinean flag shall be obtained by the Buyer for each Ship according to the Programme general schedule.

073 - Noise and Vibration

The equipment complies with the vibration levels specified in the classification rules.

The torsional vibration characteristics of the Diesel propulsion engines with the complete propulsion transmission system are calculated in accordance with the class requirements.

The noise levels are measured in accordance with the classification rules for a speed of 12 knots. The target acoustic levels are given in the table below:

• Bridge.....	65 dbA
• Cabins (forward).....	60 dbA
• Cabins (aft)	65 dbA
• Offices.....	65 dbA
• Communal spaces.....	65 dbA
• Sick bay	60 dbA
• Galleys (without equipment operating)	75 dbA
• Workshops, laundry (without equipment operating).....	85 dbA
• Passageways.....	70 dbA
• Operational Spaces	60 dbA
• Main Switchboard room.....	75 dbA
• Engine and temporarily manned auxiliary spaces	110 dbA
• Engine and permanently manned auxiliary spaces	90 dbA
• Unoccupied machinery spaces.....	90 dbA

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The target noise levels indicated above exclude noise due to wind in working areas on the upper deck.

074 – Casting, Welding, Riveting and Allied Processes

Detail welding, preparation of brackets, welding procedures and the monitoring and inspection of work are carried out in accordance with the practices of the Seller or the shipyard and are approved by the Classification Society requirements.

Welds are tested (whenever required by the class) in accordance with approved procedures and the applicable requirements of the Classification Society.

When continuous welding is not required, intermittent welding is used.

Welding inside tanks is carried out by continuous bead welding.

Welding of the hull is inspected at points specified by the Classification Society, as indicated below:

- Weld thickness greater than 40 mm: tested by ultrasound; and
- Other: X-ray testing.

076 - Reliability and Maintainability

Maintainability has been taken into consideration from the start of the design phase:

- To facilitate the maintenance and the equipment handling;
- To minimise the time for maintenance work; and
- To reduce maintenance costs.

The use of systems proven at sea and used in the merchant navy improves reliability.

The removal paths, deck panels and maintenance areas provided facilitate maintenance and the handling of equipment.

077 - Safety

0771 – Navigation

The radio communication equipment is compliant with IMO Global Maritime Distress and Safety System (GMDSS) regulations A3

The ship is compliant with:

- SOLAS chapter V for the list of minimal navigational equipment required to ensure the ship's safety,
- International Regulations for Preventing Collisions at Sea, 1972 and 1983 amendments (COLREG),

with the exceptions usually accepted for warships, i.e. non compliances justified by the specificities of warships, in particular their topside.

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0772 - Safety Systems

Safety systems (fire-detection, fire-fighting, flooding detection and draining) are compliant with the requirements of the Class regulations applicable to this ship.

Protection against water leaks is by means of subdivision in the longitudinal direction into 6 watertight compartments separated by 5 main watertight bulkheads (MWB).

Fire-insulation is compliant with BV rules excluding ammunitions magazine which is compliant with Seller's standard.

0773 - Personal safety

Means of escape from spaces are compliant with BV regulations.

Safety labelling is compliant with IMO A.760 (18) (symbols relative to life-saving appliance).

Where necessary, safety nets (flight deck) or lifelines are installed.

079 - Seaworthiness**0791 - Stability**

The stability of the ship is defined in accordance with the rules of the Classification Society.




0792 - Seakeeping

The ship is fitted with an active stabilization system. See § 565 for detailed description of the system.

The seakeeping qualities of the ship equipped with two 2.5 m² fins are given in the following table. The calculations used for the table below are made according to the NATO STANAG 4154; they take into account that the ship is sailing at least 50% of the time at a speed less or equal to 12 knots.

Table 1. Seakeeping Qualities (For Information)

Operation	SS 3/4	SS 4	SS 4/5	SS 5
Transit				
Sustained speed in green seas				
Helicopter landing & take-off				
Helicopter handling				
RHIB operation				
Main gun operation				

-  Operability below 50%
-  Operability between 50% and 80%
-  Operability greater than 80%

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0793 - Manoeuvrability

Fitted with 2 rudder blades, the ship satisfies the rotation requirements stated in IMO resolution MSC 137 (76) Standards of maneuverability of ships.

When turning, the tactical diameter at the test speed of 18.5 kts is less than 400 meters (less than 5x Lwl according to the IMO resolution) for a rudder angle of 35°.

The ship is fitted with variable pitch propellers giving a stopping distance at the test speed of 18.5 kts of less than 400 m (which is much less than 15x Lwl required by the IMO resolution).

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100 - Hull Structure

110 - Shell and Support Structure

111 - Shell Plating

General Description

The hull is built from high strength DH36 steel or equivalent. Its construction complies with the rules of the Classification Society, including for the additional class notation ICE 1C, and the naval construction standards of the Seller.

The hull structure is of mixed type with longitudinal predominance. The plates and stiffeners are obtained from standard catalogues.

The transverse frames are spaced by 1,500 mm and the spacing between the longitudinal stiffeners is 500 mm. Reinforcements may lead to shorter frame spacing locally when necessary.

According to BV additional class notation ICE CLASS IC, the hull plating and structure are reinforced on a belt located all around the hull, at the level of the ice upper and lower waterlines, as per rules.

Parts subject to the overall bending, contributing to the longitudinal strength of the ship girder are as follows:

- The two continuous decks extend for the whole length of the ship (the strength deck (4.65 m/BL and the main deck (7.55 m/BL));
- The lateral keelsons and hull plating; and
- The deck at 2.15 m/BL on the front (this deck only being continuous on the front up to the machine room; its contribution is therefore only effective on one half of the ship).

Scantling complies with the applicable requirements of the class regulations.

The structural elements are aligned to facilitate stress distribution and thus reduce their areas of concentration. Arrangements are made to reduce the stresses around openings, in accordance with the requirements of the applicable regulations and the standards of construction of the Seller.

Any lack of flatness of the hull plating, the deck and internal bulkheads is treated in accordance with the standards of construction of the Seller.

114 - Shell Appendages

General Description

The ship is equipped with hull appendages comprising the bilge keels, shaft brackets and rudder skegs.

Bilge keels

The two bilge keels are fitted on the port and starboard side and positioned along the flow lines.



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They are symmetrical with respect to the axis of the ship and their dimensions are as follows:

- Length: 19.8 m
- Breadth: 0.4 m

Shaft Brackets

Each shaft line is fitted with 2 shaft brackets.

Rudder skegs

The ship is fitted with two spade rudder blades.

The position of the rudder blades (not in line with the propellers) is defined so as to permit the removal of each shaft line without removing the rudder blades.

115 - Pillars

General Description

Pillars are placed in order to support the ship girder subject to bending and to absorb the stresses transmitted by the structure. Pillars are aligned with the primary longitudinal and transverse stiffeners. Their integration is optimized in spaces or areas subject to significant integration stresses (fore and after deck, engine room, etc.).

120 - Hull Structural Bulkheads

General Description

The watertight bulkheads consist of panels fitted with vertical stiffeners.

The longitudinal bulkheads consist of panels fitted with horizontal or vertical stiffeners.

123 - Chain Locker

General Description

The chain locker is located beneath the foredeck, in accordance with the General Arrangement of the ship.

The volume of the chain locker is dimensioned to accept the anchor chains and is divided into two by a central longitudinal bulkhead.

Strong wooden decking is laid along the hull plating to obtain smooth surfaces inside the chain locker. The bottom of the chain locker consists of a thick perforated sheet enabling water to run out and thereby limit corrosion.

Both parts of the chain locker are accessible through manholes located on the foredeck.

The chain locker is fitted with a fixed stripping system.

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130 - Hull Decks

General Description

The helicopter landing area is made from DH36 steel, scantling being in accordance with the requirements of the applicable class regulations. It meets the mechanical requirements for landing of a 10-ton helicopter.

150 - Deck House Structure

General Description

The superstructures are designed in accordance with the requirements of the applicable class regulations and with the construction standards of the Seller.

The superstructures are made from DH36 or equivalent high strength steel.

Arrangements (stream lines, deck insert, etc.) are made to limit any stress concentrations in certain areas of the superstructure unit. The areas at the foot of the superstructure are reinforced in accordance with the requirements of the applicable class regulations and the construction standards of the Seller.

160 - Special Structures

161 - Moulded, Forged and Welded Construction Parts

General Description

Side Hawsepipes

The ship is fitted with two hawse pipes and anchor boxes positioned laterally in accordance with the General Arrangement of the ship. The hawse pipes guide the anchor chains during mooring and the anchor boxes hold the anchors in their rest position.

The hawse pipes consist of a very thick tube, flared at the end on the hull side.

Chain locker hawse pipes

Two chain locker hawse pipes guide the anchor chains between the outlet from sprocket of the windlass/capstan and the chain locker.

They are fitted with covers designed to limit the filling of the chain locker with sea water.

167 - Structural Closures

General Description

Hatches

The ship is fitted with steel hatches in accordance with the General Arrangement.



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Their degree of water tightness and the coaming height comply with the rules of the Classification Society.

Watertight Doors

The ship is fitted with steel watertight doors, in accordance with the General Arrangement.

Their degree of water tightness complies with the classification rules, and their fire resistance complies with SOLAS standards.

The watertight doors fitted in the evacuation path have a passage width of 900 mm (SOLAS/BV regulation).

Manholes

Manhole covers and coamings are made of steel.

The size of their opening is about 600x 400 mm.

Manholes are designed to give access to the cofferdams and tanks built into the ship.

169 - Special Purpose Closure and Structures

General Description

Side Doors

The ship is fitted amidships with two side doors (one on each side), located on the main deck about 1.5 m above the waterline.

The opening size is about 900x 2,000 mm.

These side doors are manually operated, an assistance system secures opening/closing.

The Open/closed status of the side doors is monitored from the PMS.

Embarkation Stern Doors

Each stern RHIB ramp is closed by a 2-leaf door. Each door is hydraulically operated.

The two doors are locally controlled from the aft deck.

The Open/closed status of the stern doors is monitored from the PMS.

170 - Mast

General Description

The ship is fitted with a single mast consisting mainly of a composite radome surmounted by an aluminium alloy mast.

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180 - Foundations

General Description

The various seatings are designed to satisfy the functional requirements of the equipment they support (rigidity and mechanical strength).

The structural seatings are made from DH36 high tensile steel. They are designed to ensure continuity between the structural seatings and structural elements surrounding them. The structural seatings support the engines, gearboxes and gun.

The non-structural seatings are made from category A steel. High tensile steel may be used locally in certain cases.

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200 - Propulsion Plant

200 - General

General Description

The propulsion architecture is type "DAD" with two propulsion drive shaft lines, each shaft line being driven by one Diesel engine.

The propulsion equipment comprises:

- 2 Diesel engines;
- 2 gearboxes with PTO for alternators;
- 2 propeller shaft lines; and
- 2 controllable pitch propellers (CPP).

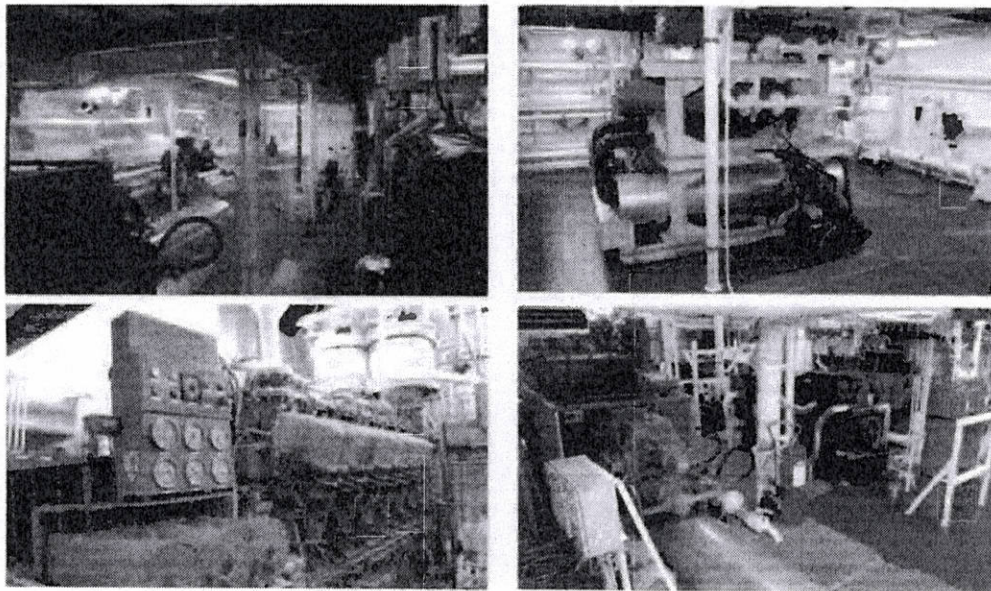


Figure 5. Propulsion Room of OPV L'Adroit

Power is supplied to each shaft line by a turbocharged Diesel engine. The gearbox reduces the speed of rotation between the Diesel engine and the shaft line.

Clutches built into the gearbox are used to couple the Diesel engine.

The Diesel engine/gearbox assemblies are installed in a single engines compartment.

Depending on the required speed, the suitable mode of navigation (maximum speed, economic speed, low speed, electric production on one driven shaft through alternator, etc.) is obtained by varying the number of propulsion lines in operation, the speed of rotation of the diesel engines, the pitch of the propeller or the operation of alternators.

Engine maintenance is facilitated by the handling rails fitted over it.

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The following propulsion modes are available:

- Two active propulsion shafts, in the "Combined control" mode or "fixed rpm" mode.
- One shaft in the wake (or brake), one driven shaft:
 - The driven shaft can run in the "Combined control" mode or "fixed rpm" mode.
 - The required onboard electrical power is supplied by the driven alternator through the PTO of the powered gearbox, in transit mode up to a speed of 10 knots, the driven shaft run only in the "fixed rpm" mode. The ship's speed is then adjusted via propeller's pitch.

There is no coupling between alternator and Diesel generator (only for transitional phase).

230 - Propulsion Units

233 - Propulsion Internal Combustion Engines

General Description

The main engines are turbocharged Diesel type internal combustion engines.

The maximum power of each Diesel engine is about 3.5 MW.

These levels of driving force at the engine flywheel are defined in accordance with standard ISO 3046/1.

Each Diesel engine assembly comprises:

- The engine itself;
- The flexible mountings designed to decouple the engine from the hull;
- A flexible coupling fitted on the engine shaft to transmit the rotation of the engine;
- Units for lubrication, preheating and cooling;
- A fuel supply system;
- An independent exhaust system, fitted with a silencer (the intake of combustion air taking place directly in the compartment); and
- A local control panel.

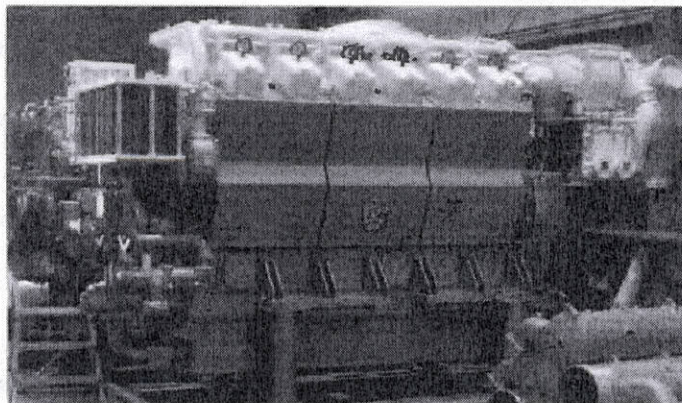


Figure 6. 12V DZC ABC Diesel Engine of OPV L'Adroit

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Basic characteristics of the Diesel engine:

- Maker ABC
- Type 16 V DZC
- Cycle 4 stroke, single acting
- Number of cylinders 16
- Nominal Power (ISO) 3,500 kW @ 1,000 rpm
- Displacement 191.5 dm³
- Bore 256 mm
- Stroke 310 mm
- Compression ratio 12.1/1
- Injection Direct, mechanical, one pump per cylinder
- Speed 1,000 rpm
- Idling speed 330 rpm
- Certification IMO Tier II – BV
- Mounting Resilient
- Alarms and safeties As per rules

240 - Transmission Systems

241 - Propulsion Reduction Gear

General Description

The gearbox assembly comprises:

- A low speed pinion and a high speed pinion;
- A multiplate clutch at the drive input;
- An actuator that controls the pitch of the propeller, fitted to the low speed shaft;
- A cooling unit;
- A local control panel;
- An auxiliary pump; and
- 1 PTO (for driven alternator).

Depending on the required speed and/or electric production mode, the ship can be propelled by only one shaft line.

In this case, the other shaft line is trailing and the lubrication of the gearbox is completed by an electric gearbox emergency lubricating pump (standby pump).

The gearboxes are compliant with BV additional class notation ICE 1C.

242 - Propulsion Couplings

General Description

A flexible coupling is fitted between each main Diesel engine and its gearbox; this is bolted to the engine flywheel.

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The flexible coupling is capable of resisting the relative movements of the main Diesel engine mounted flexibly (while operating), due to the combination of operating loads and ship movements.

243 - Propulsion Shafting

General Description

The ship is propelled by two propulsive shaft lines driving controllable pitch propellers.

The characteristics of the propulsion shaft lines are compliant with the additional class notation BV ICE CLASS IC.

245 - Propellers

General Description

The characteristics of the propellers are as follows:

- Type controllable pitch propeller
- Diameter about 2.7 m
- Number of blades 4
- Rotation speed approx. 250rpm

The two propellers rotate in opposite directions (supra convergent).

The characteristics of the propellers are compliant with the additional class notation BV ICE 1C.

250 - Propulsion Support System (Except Fuel and Lube Oil)

251 - Combustion Air System

General Description

The combustion air consumed by the Diesel engines is directly sucked from inside the engine compartment. The engines are fitted with air filters.

Air combustion system consists in spray separators, fan and silencer.

252 - Propulsion Control System

General Description

The main propulsion is controlled and monitored:

- Locally, using the control panels of the main components (Diesel engine, gearbox, clutches); and
- Remotely, from the bridge or the main switchboard room.

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In the normal mode, it is possible from the bridge:

- To change the configuration (coupling/decoupling of the Diesel engine, inactive mode),
- To control the speed of the ship using a combined mode,
- To apply emergency commands using dedicated buttons.

The Diesel engines are started pneumatically. The air bottles capacity allows 6 starts for each engine.

256 - Circulating and Cooling Sea Water System

General Description

Fresh water is cooled by a "cooler box" located in coffer dams in the bottom of the hull. Cooling is produced by natural circulation of sea water in the coffer dam or by circulation forced by the speed of the ship.

The fresh water cooling system cools the following items:

- The Diesel engines; and
- The gearboxes.

259 – Uptakes

General Description

The exhaust consists of two subassemblies (one per engine) each comprising a manifold and a silencer to attenuate the noise and evacuate the combustion gases to the outside. The exhaust pipes are mounted on flexible mounts to reduce the transmission of vibrations to the ship.

The two exhaust pipes are fitted with a bowl to recover rain water and condensates so that water does not reach the engine. This water is stored (hydrocarbonated water), treated and discarded.

260 - Propulsion Support System (Fuel and Lube Oil)

261 - Fuel Service System

General Description

During normal use, each Diesel engine is supplied with fuel oil by a dedicated daily tank which is shared with a Diesel generator.

If necessary, each tank can supply all Diesel engines (propulsion engines and Diesel generators).

Daily tanks can supply both propulsion engines (at full power) and both Diesel generators for 3 hours according to the classification rules.

Filtered fuel oil is supplied by the fuel oil distribution system.

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262 - Main Propulsion Lube Oil System

General Description

The main engines and gearboxes are wet sump. Topping up and replacement of the oil are carried out by means of a dedicated system.

263 - Shaft Lube Oil System

General Description

The propulsion shaft bearings are lubricated by oil immersed or sea water in the aft tube.



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300 - Electric Plant

300 - General

301 - General Arrangement – Electrical Drawings

Applicable Documents

The electrical plant complies with the classification rules and publication IEC 60092 "Electrical Installations on Ships".

Operation of all the electrical systems complies with the classification rules.

General Description

The supply of electrical energy necessary on board is provided by two Diesel Generators, rated according to the electrical consumption budget established for the ship. The design of all the electrical systems complies with the classification rules.

The electrical energy can also be generated by one shaft alternator powered by the main propulsion engines through the PTO of the gearbox, at slow patrol speeds.

The alternators and Diesel generators can be coupled for transitional periods so as to switch from an electrical production mode to another (ie: from alternator to gensets and vice versa).

The full load conditions are met by two Diesel generators, in accordance with the electrical consumption analysis.

The Combat System equipment which requires STANAG 1008 supplies is fitted with converters or dedicated inverters.

The electrical plant comprises:

- One main power supply system, 440 V 60 Hz, 3-phase;
- One main power supply subsystem, 115 V 60 Hz, 3-phase;
- One emergency power supply system, 440 V 60 Hz, 3-phase;
- One lighting and appliances subsystem, 230 V 60 Hz; and
- One transitional emergency power supply comprising three 24 V DC networks.

The AC electrical distribution system is the floating neutral type (with non-distributed neutral). The insulation level is continuously monitored by permanent insulation controllers located in electrical panels. If an insulation fault is detected, an alarm is sent to the PMS.

Vital and essential equipment (listed in accordance with the classification rules) are supplied from the Main Power Panel, via the emergency panel in the "normal" mode and by the emergency Diesel generator via the emergency panel in the "Emergency" mode.

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303 - Protective Devices

General Description

All sources (Diesel generators, transformers) are protected by circuit breakers.

All the 440 V, 230 V and 115 V networks are protected at the output by circuit breakers located in the distribution panel.

Adjustment of the circuit breakers gives full, selective electrical protection.

The 24 VDC distribution circuits are protected by fuses.

304 - Electric Cables

Applicable Documents

The cables comply with IEC standards.

In particular, the cables comply with the following requirements:

- Non-flame and fire propagating, in accordance with standards IEC 60332-1 and IEC 60332-3,
- Low toxicity in accordance with standard IEC 61034,
- Mostly halogen-free in accordance with standard IEC 600754.

General Description

The cables are mostly laid in cable ducts in accordance with the standards of the Seller and its subcontractors. As far as possible, cables are attached to structural elements with self-locking cable ties.

If necessary, cables are protected according to EMC/EMI requirements.

The cable glands used comply with sealing and fire-resistance requirements for partitions and decks, in accordance with regulations.

The choice and fitting of fire resistant cables (IEC 60331) is made in accordance with the classification rules.

305 - Electrical Designating and Marking

General Description

The distribution panels and their internal components (circuit breakers, relays, fuses, terminal blocks) are marked by information labels.

Cables are labeled in accordance with the requirements of the Seller or the shipyard.

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310 - Electric Power Generation

311 - Ship Service Power Generation

General Description

Electricity is generated by two main, identical marine grade Diesel Generators (DG). These are located in the engine compartment of the ship.

Each Diesel Generator comprises:

- The Diesel engine and generator,
- Flexible mountings to decouple the DG from the hull,
- Pumps for lubrication and cooling,
- Fuel oil pumps and filters,
- An exhaust system with silencer (intake is directly in the machine compartment),
- A local control panel.

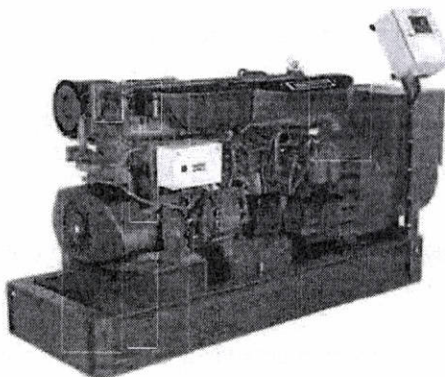


Figure 7. Main Diesel Generator Set of OPV L'Adroit

The engines are started by compressed air. The capacity of the air bottles enables 3 starts per engine.

In navigation mode, one Diesel Generator generates power. In combat mode, two main Diesel Generators are running.

The engine and generator of each main Diesel Generator group are aligned and directly connected by a flexible coupling.

Each Diesel Generator is rigidly mounted on a frame, itself mounted on flexible mounts.

Each Diesel engine of the two main DG groups is a 4 stroke, water-cooled, non-reversible engine, adapted to operate with distilled Marine fuel (fuel oil NATO F-76), in accordance with standard ISO 8217-F (1996) DMA. Each engine of the main generator Diesel is fitted with systems and components that comply with the manufacturer's standards.

Each generator is self-excited (with no slip rings or brushes and complies with the requirements for the category).

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The principal characteristics of each main Diesel Generator are as follows:

- Rated Generator Output: approximately 420 kW
- Voltage: 3-phase 440 V
- Frequency: 60 Hz
- Insulation Class: H
- Temperature Rise Class: F
- Enclosure: IP23

PTO driven alternators

A self-exciting, self-governing AC generator is fitted on the PTO of each main engine's gearbox, each with the following main characteristics:

- Rated Output: approximately 400 kW
- Voltage: 3-phase 440 V
- Frequency: 60 Hz
- Cosine: 0.8 in continuous service
- Insulation Class: H
- Temperature Rise Class: F
- Enclosure: IP23
- Integrated automatic voltage stabilizer
- Integrated exciter
- Anti-condensation heating
- Ambient air cooling

Control, Monitoring and Automation

Electrical generation is controlled from the Main Power Panel (MPP) located at the Engine control room.

The Man-Machine interface of the main panel has the following commands:

- Start/stop of main DG;
- Automatic or manual coupling/uncoupling of sources (DG, PTO driven alternators and shore supply);
- Breakers operations;
- Blackout management by emergency DG starting.

Each main Diesel generator can also be manually controlled from its own control panel.

In the event of an emergency, all the Diesel generators can be stopped at the entrance to the machine room

The main panel can be used to monitor the electrical parameters of the sources and distribution.

The following alarms and information are sent to the Platform Monitoring System (PMS):

- Critical alarms from the DGs,
- Status of circuit breakers of the sources,
- Total failure alarm,
- Insulation faults on the 440 V, 230 V, 115 V and 24 V networks,
- Faults in the battery chargers.

The DG is fitted with the Marine Commercial Control system. The Marine Control Unit (MCU), Engine Control Unit and Power Module, together with the Shutdown Unit (SDU) provide completely redundant engine control.

The MCU features a friendly interface based on icons, symbols and bar-graphs for intuitive operation of the main functionalities:

- Indication of a list of alarms on the screen,
- History of events associated with the engines, with a view to revealing information,
- Counting device for the operating time and number of starts,
- Measurement of the speed of the magnetic sensor (+ redundant channel),

The SDU is a self-contained cabled system for the protection of the engine, fitted with different wired transmitters, a switch input and outputs for refueling, offering a fully redundant protection system based on monitoring the following parameters:

- Cooling water temperature,
- Gears lubricating oil pressure,
- Engine lubricating oil pressure,
- Cooling water pressure,
- Exhaust temperature,
- Overspeed.

All channels are fitted with detection by breaking a wire which triggers an alarm in the event of loss of connection or switching off the power supply of the SDU.

312 - Emergency Generator

General Description

The ship is fitted with one marine type emergency Diesel generator set, developing a nominal electrical power of about 140 kW (3-phase 440 V 60 Hz). It is installed in an area above the watertight deck. It is designed to operate totally independently and start automatically after 30 seconds in the event of a total failure.

It can operate at 110% of its nominal power for one 1 hour at the most.

The emergency Diesel generator is fitted with systems and components complying with the manufacturer's standards.

It is started electrically with a redundant 24 V DC battery, in accordance with the classification rules.

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A generator (with self-excitation) is driven by the emergency Diesel engine and has the following principal characteristics:

- Rated Output:..... approx. 170 kW
- Voltage:..... 3-phase 440 V
- Frequency:..... 60 Hz
- Cosine:..... 0.8 in continuous service
- Insulation Class:..... H
- Temperature Rise Class:..... F
- Enclosure:..... IP23
- Integrated automatic voltage stabilizer
- Integrated exciter
- Anti-condensation heating
- Ambient air cooling

Control, Monitoring and Automation

The emergency Diesel generator can be started/stopped from the local control panel.

It is fitted with an instrumentation panel and standard instrumentation for the engine, in accordance with the classification rules.

The status of the emergency Diesel generator and its run/stop status are monitored remotely from the PMS.

In the event of electrical failure, the emergency Diesel generator starts automatically in 30 seconds. The main emergency panel is disconnected from the main power panel and connected automatically to the emergency Diesel generator.

The emergency Diesel generator is fitted with the same control and monitoring system as the main Diesel generators.

313 - Batteries and Service Facilities

General Description

The emergency temporary electrical source consists of a 24 V battery which operates without recharging while maintaining its voltage throughout the discharge period (at +/- 12% of its nominal voltage). It is fitted to automatically supply electricity in the event of a blackout.

Three groups of batteries and associated chargers are dedicated to the temporary source for at least half an hour, in accordance with the classification rules:

- Two groups of battery and a charger in the engine compartment,
- One group and a charger on the bridge.

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These batteries supply three electrical panels which distribute power to the essential services, as defined by the classification rules:

- Control systems,
- Emergency lighting and navigation lights,
- Mandatory internal and external communication equipment,
- Navigation equipment,
- Essential alarms,
- Control of the main engine.

The GMDSS has its own battery and charger.

314 - Power Conversion Equipment

General Description

The local converters and transformers that supply a user or group of users comply with the classification rules.

Transformers are of dry type and are cooled by natural air.

Helicopter Starting Unit

The ship is fitted with a 28 V starter unit and a 400 Hz transformer supplying a power of 30 kVA with the characteristics indicated in § 588.

320 - Power Distribution Systems

General Description

The main power distribution system comprises:

- A Main Power Panel (MPP),
- A Shore power supply system,
- Six Secondary Power Panels (SPP).

The Main Power Panel is supplied by the main Diesel Generators, the PTO driven alternators or by the shore power supply.

It protects the associated Diesel Generators.

It distributes electricity to the emergency panel, the secondary panels and some other equipment. It is designed and manufactured in accordance with the classification rules. All the output circuits are protected by circuit breakers of adequate rating.

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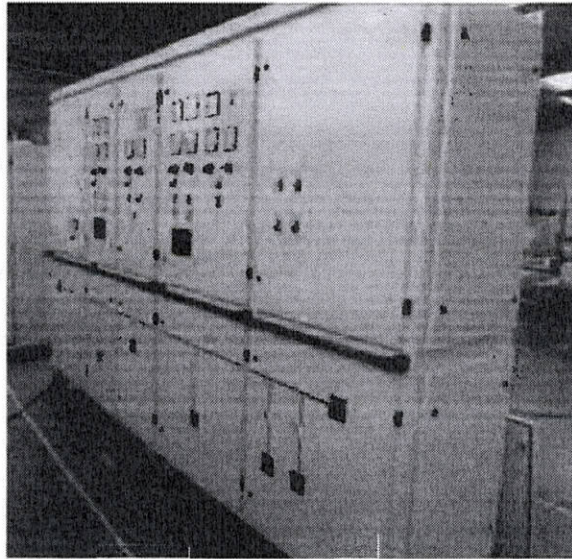


Figure 8. Main Switchboard View of OPV L'Adroit

The shore supply comprises a shore flexible power supply cable, 50 meters long, capable of 240 kW under 3-phase 440 V 60 Hz, fitted with plugs and directly linked to MPP, allowing its quick and easy operation.

Six secondary power panels judiciously distributed within the ship are supplied by the TPF. All output circuits are protected by circuit breakers of adequate rating. The secondary power panels also include, if necessary, the electrical engine starting systems.

The alarms concerning this network (that is, in the event of tripping of the circuit breakers) are sent to the PMS.

321 - Ship Service Power Cable

General Description

These cables comply with Classification Society requirements.

Concerning their routing on board, the cables are classified in two different categories, in accordance with EMC and IME standards:

- Cables causing interference,
- Neutral or sensitive cables.

The routes of cables causing interference and those of neutral/sensitive cables are separated to prevent any electromagnetic interference.

The cables pass through bulkheads and decks using multi-way glands suitable for the nature of the bulkheads or decks passed through.

324 - Switchgear and Panels

Applicable Documents

Construction of switchgears and panels is in accordance with IEC Publication 60092-302 and classification rules:

- Degree of Protection: IP 23
- Surface Protection: In accordance with the classification rules
- Ambient Temperature: -10 °C to +35°C
- Cable Entry: Bottom by penetration glands
- Ventilation: Natural

General Description

230 V 60 Hz Distribution

This system is composed of the following subsystems:

- Lighting and appliances and;
- Electrical domestic.

They consist in 230 V 60 Hz panels each supplied from a 440/230 V, 60 Hz transformer itself supplied from a secondary panel located in the same part of the ship. Their design complies with the classification rules.

They supply domestic electrical equipment mainly using electrical sockets.

These panels are distributed within the ship and are fitted with modular circuit breakers.

Electrical domestic subsystem complies with TT neutral earthing system.

115 V 60 Hz Power supply system

Equipment requiring a 115 V, 60 Hz power supply is supplied by a dedicated subsystem comprising a 115 V 60 Hz electrical panel fed by a three-phase 440/115 V transformer connected to the emergency switchboard.

Power Supply Sockets

Power supply sockets on the external bridge are class IP56. They comply with Argentinian standard.

230 V power supply sockets for general use are distributed within the ship, except in dangerous areas that present a risk of explosion.

32 A, 3 Pin + Earth power supply sockets are provided in the following areas:

- On the external bridge,
- In the workshop,
- Inside the ship, except in dangerous areas that present a risk of explosion.

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330 – Lighting and Appliances System

General Description

The lighting and appliances system comprises:

- A 230 V 60 Hz electrical network;
- Normal lighting;
- Emergency lighting; and
- Special lighting.

The 230 V, 60 Hz mains is powered by the main system by two redundant 440 V/230 V - air-cooled transformers which supply a 230 V main panel. This panel supplies approximately 9 distribution cabinets placed in suitable positions on the ship which themselves supply the lighting and equipment sockets.

Emergency lighting is provided by a dedicated network supplied by the emergency Diesel Generator through a dedicated air-cooled transformer, which itself supplies a 230 V emergency panel. This panel supplies 3 distribution cabinets placed in suitable positions on the ship which themselves supply the lighting.

Special lighting includes:

- Two (2) movable floodlights, supplied by the normal lighting panel,
- Lighting of evacuation areas, supplied by the emergency panel.

Lighting located in dangerous areas that present a risk of explosion are controlled by switches located outside these areas; the switches are fitted with an indicator light. Lighting is mounted in accordance with requirements.

Switches, power supply sockets and junction boxes located on exposed decks are made from copper or stainless steel, in accordance with the standard of the subcontractor and of class IP56. Lighting equipment boxes located on the deck are of class IP56.

331 - Lighting Distribution

General Description

Normal lighting

Normal lighting provides general lighting in the various compartments of the ship to permit daily life on board.

Normal lighting is supplied by the 230 V - 60 Hz power supply system of the ship.

Emergency lighting

Temporary emergency lighting is installed in all the spaces stipulated by classification the rules (gangways, machine compartments, command stations, etc.). It enables personnel to move around the ship and ensures that vital and essential equipment continues to function in the event of failure of the normal lighting.

It lights automatically as soon as the normal power supply fails.

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Emergency lighting is provided by 24 VDC lighting powered by a 24 VDC network. Conveniently distributed on board, it provides temporary lighting while the emergency Diesel Generator is starting up.

Special/floodlight lighting

The bridge wings are fitted with two floodlights.

On the upper bridge, the boat and life rafts launch areas are lit by floodlights supplied by the emergency panel.

Four flood lights equip the first deck and fore and aft areas.

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400 - Command and Surveillance

400 - General

This chapter deals with the specifications for the Ship's Command and Surveillance capabilities and equipment.

The control and monitoring systems improve and simplify the tasks of the operator by means of intuitive MMIs and automatic methods and permits efficient management of the ship.

It includes:

- A Platform Monitoring System (PMS);
- The POLARIS® Combat Management System and
- A Navigation System;

The management of the ship in the situation of routine operation is centralized on the bridge with a 360° view which enhances maritime security and provides a direct view on the helicopter deck and stern launching ramps.

401 - General Arrangements – Command and Surveillance

Command and Surveillance stations are located:

- On the bridge for the navigation;

On the bridge, in the Engine control room and locally, for management of the Platform; and

- On the bridge for the Combat System.

Layout of the Bridge

In normal operating situation, the ship is centrally controlled and monitored from the bridge.

The bridge is the dedicated place for navigational control, platform operations and Combat System operations.

The bridge control stations include:

- The Commanding Officer's armchair;
- The "Helmsman" console;
- The Officer of the Watch (OOW) station;
- The Engineer of the Watch (EOW) station;
- The Chart Table;
- The Communication console;
- The AVIA console; and
- The Operations area including POLARIS® consoles.

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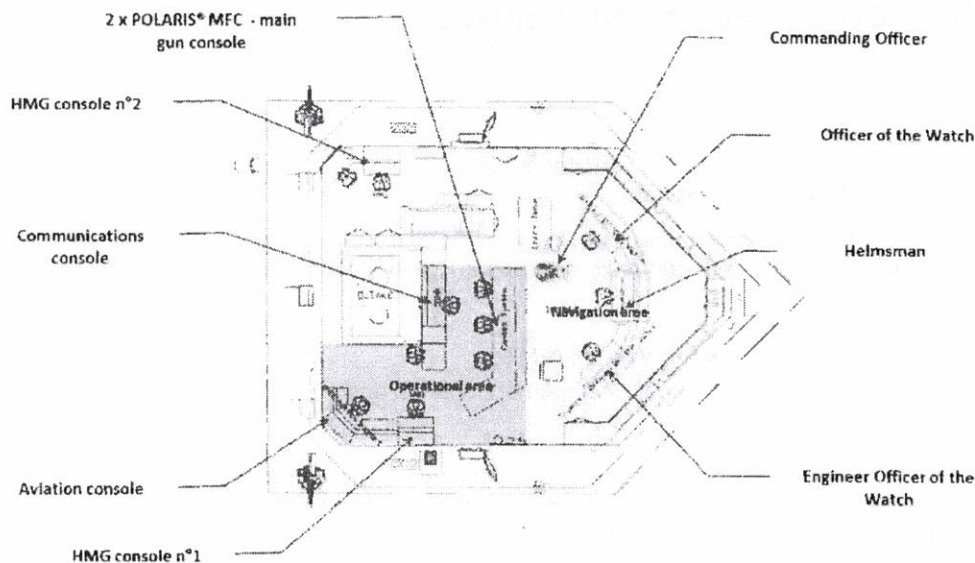


Figure 9. Bridge Layout

Control and monitoring of the navigation lights, signalling lights, whistles/sirens and window wipers are also incorporated in consoles on the bridge.

The OOW workstation comprises:

- The ECDIS and AIS associated displays for nautical surveillance;
- One ARPA display for nautical safety;
- Internal and external communication means (intercoms, telephones, general broadcasting, TAG, VHF IMM);
- One seat for the operator.

The EOW workstation includes:

- The Platform Monitoring System MMI;
- Panels dedicated to monitor and control safety equipment;
- Internal communication equipment;
- One colour flat screen to display CCTV;
- One seat for the operator.

The Helmsman's console includes:

- A central console for control and monitoring of the propulsion, the steering gear and automatic pilot. This workstation is designed to be used by an operator in a seated or standing position;
- The head-up displays including the navigation data repeaters, meteorological data, time, roll/pitch;
- One seat for the operator.

The Commanding Officer's armchair provides:

- Internal communication equipment,
- Access to one ECDIS and AIS display on the chart table.

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The chart table includes:

- One GPS,
- One AIS,
- One rotating ECDIS and AIS display screen,
- One paper chart table type work surface (charts are BFE),
- One chest of drawers for charts,
- One printer.

This set of equipment is used to prepare the navigation and transfer data to the automatic pilot.

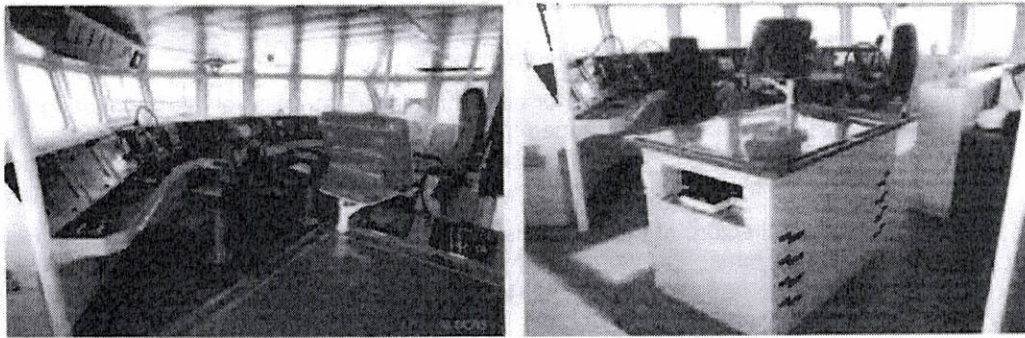


Figure 10. Chart Table and Rotating ECDIS/ARPA Display of OPV L'Adroit

The communication console is used to manage and operate GMDSS A3 regulatory communications.

The AVIA console is located on the starboard side with a direct view on the flight deck. Aircraft operations are directed from this console by the Flight Deck Officer. From this position, the FDO has an unobstructed view of the flight deck and helicopter during its approach, landing and take-off.

The AVIA console includes:

- The control and monitoring of visual landing aids system (including Glide Slope Indicator and Horizon Reference Bar) and alarms;
- Internal and external communication (VHF ICAO) means (in particular with the helicopter);
- Navigation and environmental information, including:
 - The direction and speed of the wind (relative),
 - Roll and pitch,
 - Ship speed.

The Combat System area is fitted on the bridge with the following equipment:

- Two POLARIS® consoles;
- One surveillance radar workstation
- One main gun console (remote control console)
- One control panel with joystick for Thermal imaging system

Heavy Machine Guns consoles are located on port side and starboard side of the Bridge.

Layout of the Engine Control Room

The Engine control room is located close to the machine compartment and is equipped with a control and monitoring workstation. The latter is used in particular for control and monitoring of the propulsion, the electrical plant and certain auxiliaries. It also contains internal communication equipment and CCTV for monitoring the machine compartment.

The Engine control room also contains the Main Switchboard.

410 – Command and Control Systems

411 – Platform Monitoring System (PMS)

The PMS complies with SOLAS requirements.

Apart from the local control modes for each installation, the control and monitoring of certain platform installations can be performed from the bridge or the Engine control room. Switching of priority between the two control positions is obtained by reciprocal request and acknowledgement.

The general architecture of the system is based on an IP loop with 2 redundant servers. The Industrial Programmable Automated systems (IPA) are connected to the IP loop via switches. The system supports various types of interface: dedicated serial, analogue or digital.

The PMS is capable to process simultaneously over 300 surveillance signals from the platform installations.

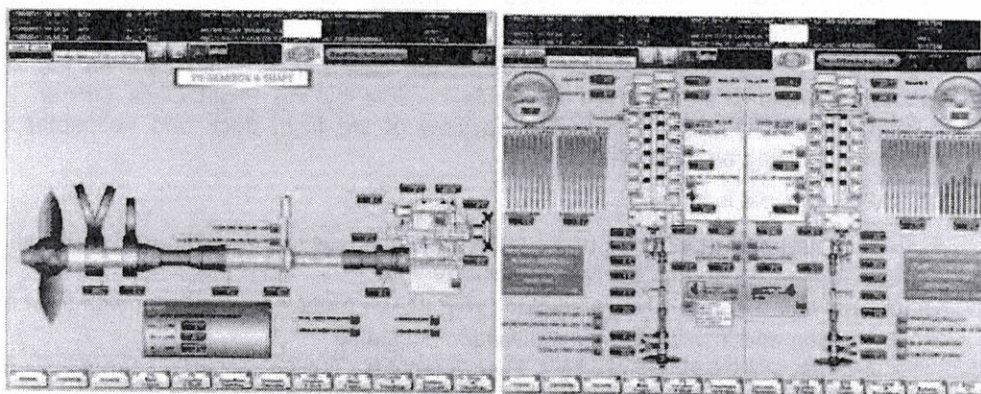


Figure 11. Example of the MMI for the PMS

Functions of the PMS

The system fulfils the following functions:

- Intuitive man/machine interface (MMI) for data monitoring,
- Displaying/storage/printing of certain data including alarm messages,
- Alerting operators by means of visual and audible alarms.

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Supervision Stations

The platform is equipped with 2 supervision workstations: one in the Engine control room and the other on the bridge (workstation of the EOW).

Each supervision station includes the following items:

- One PC type computer,
- One flat colour LCD screen,
- Operating licences,
- One printer.

Programmable Logic Controllers (PLC) Unit

The PMS comprises PLC units consisting of the following equipment:

- A rack of the programmable automated system,
- Electric power supply modules,
- Processors,
- Communication interfaces,
- Acquisition interfaces (for example, ON/OFF input, analogue input, RS422 and RS485 serial links)

Application Software

The supervision software includes:

- The software for monitoring the programmable automated system,
- Data Acquisition and processing applications,
- The alarm management device enabling:
 - Printing of alarm messages,
 - MMI displays of surveillance functions of installations (for example, propulsion, electrical plant, auxiliaries).

Alarm Management

The alarm management module (included in the supervision software) processes the data acquired and supplies visual (on the MMI) and audible alarms to the operator.

The alarms are activated when one of the parameters of the system or equipment exceeds the limits of operation, as recommended by the manufacturer or configured.

The monitoring system:

- Processes alarms in the FIFO (First In, First Out) mode,
- Records and archives these alarm messages,
- Emits a visual and audible signal when the alarm is activated,
- Prints each alarm message downstream.

Man/machine interface (MMI) function

Monitoring of the installation is based on the presentation of MMI diagrams or block diagrams giving a rapid and intuitive appreciation of the status of the installation.

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412 - Combat Management System

The Combat Management System (CMS) is the POLARIS[®] system from NAVAL GROUP.

POLARIS[®] establishes and evaluates the tactical situation and provides means of assisting in carrying out the operational activities of the ship.

POLARIS[®] collects and processes data from the sensors on the ship. When collected, correlated, evaluated and displayed, this information constitutes the tactical situation of the ship. This can be shared with other units by using the tactical data link.

In addition, POLARIS[®] provides operators with means of checking the on-board sensors.

Polaris[®] is interfaced with the following equipment:

- Sensors:
 - Surveillance Radar;
 - Thermal Imaging System;
 - AIS and ADSB
 - Main navigation radar (S band radar)
- The inertial navigation unit providing navigation data; and
- The communications system for exchanges of tactical situation data with other units

Polaris[®] physical architecture

The Polaris[®] Combat Management System is composed of the following components:

- 2 multifunction consoles, each with a dual screen, housing the tactical computers;
- 1 workstation for CMS administration;
- 1 cabinet including:
 - interface gateways
 - 1 video converter,
 - 1 network switch,
 - 1 ADSB receiver,
 - 1 inverter.

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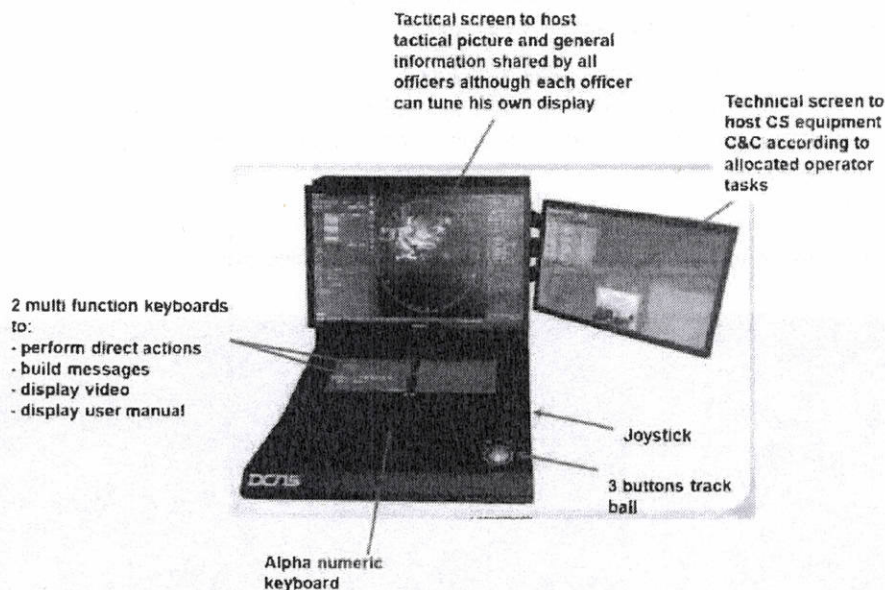


Figure 12. POLARIS® Multi-Function Console

For a convenient presentation of the tactical information and for rapid and safe decision-making, each MFC integrates the following devices:

- One tactical display that shows the tactical situation;
- One technical display which displays command and control of certain Combat System equipment according to allocated operator tasks;
- Two multi-function keyboards:
- A trackball with three buttons;
- A standard keyboard.

Polaris® functions

The POLARIS® Combat Management System performs the following functions:

- Management of the sensors,
- Computation of the tactical situation,
- Management of the NIDL® data link,
- Target designation to the weapons (main gun and heavy machine guns).

Polaris® CMS provides the operator with the following capabilities from each MFC:

- Management of the tactical situation (i.e. track creation, drop, modification, filtering);
- Setting of the parameters of the system (for example: correlation mode);
- Monitoring of connected Combat System equipment through windows dedicated to each subsystem;
- Decision aids according to incoming events (significant equipment status change, data link conflicts, ...);
- Alert management; and
- Management of the display configuration.

The tactical screen is divided into five parts:

- A square for display of the tactical picture;
- A dialogue area for monitoring the tactical picture;
- A dialogue area for command and control of Combat System equipment;
- An alert area; and
- A toolbar.

The following picture shows the organization of the tactical screen:

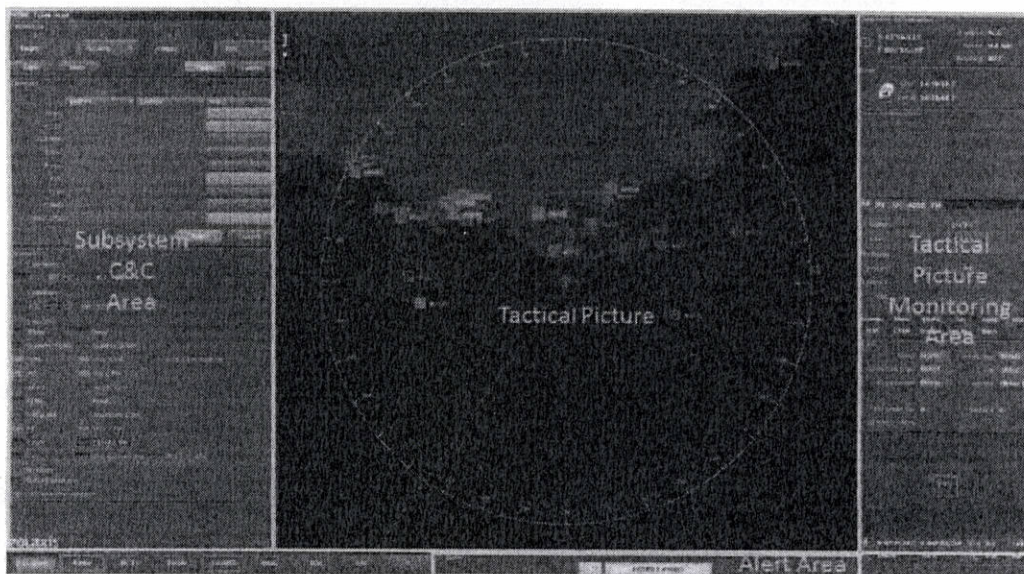


Figure 13. Example of Polaris® Tactical Screen

The square dedicated to the tactical picture displays:

- Radar video (one selected among the available ones);
- Plots;
- Tracks (STANAG 4420 symbols are used);
- Charts (in S-63 format and displayed according S-52 standard); and
- Operational areas and gun engagement area.

The toolbar below the tactical picture provides commands for filtering the objects displayed on the tactical picture (for instance, display of tracks according to their origin or their identity).

At the right of the tactical picture, a dialogue area displays information required for the monitoring of the tactical situation:

- Time information;
- Own Ship data;
- Detailed information related to the selected object of the tactical situation; and
- Reduced view of the whole tactical picture.

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The subsystem command and control area at the left of the tactical picture depends on the selected operator role. This area contains interfaces such as:

- General system interface including:
 - Synoptic of the Combat System showing status of the system and connected subsystems;
 - System setup commands;
 - Track load;
- Monitoring of the navigation radar;
- C&C of the Tactical Data Link;
- Maritime traffic synthesis;
- Tactical zoom view.

The technical screen is used to display technical views of electro-optical sensors:

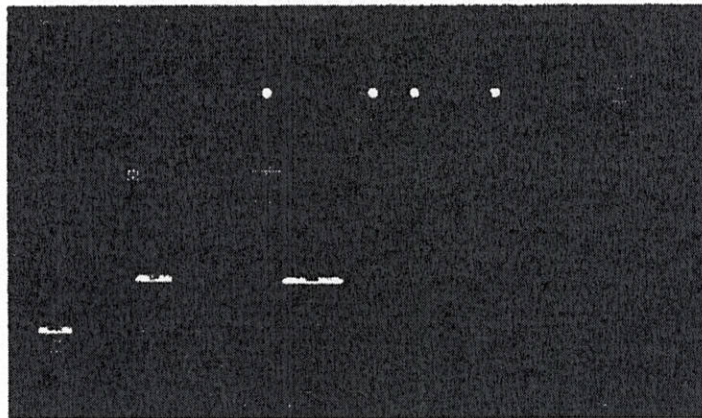


Figure 14. Example of Polaris® Technical Screen for Gun Information

Each MFC is automatically configured according to the role chosen by the operator, among a set of predefined roles. Each role is associated with a default configuration in terms of picture composition (filters, associated technical views...) which can be then modified by the operator according to its need.

Tactical Data Link Management

The Combat Management System can exchange tactical data with other units by using the tactical data link NIDL®. All units must be fitted with the same TDL system.

The data exchanged are:

- Location and identification of the OPV itself;
- Air and surface tracks;
- Special points;
- Track management messages (deletion of track, correlation of tracks).

The CMS provides a correlation function which allows regrouping of two tracks representing the same object.

Exchanges between units are made by means of UHF or HF radio.

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420 - Navigation System

General Description

The Navigation System is an ergonomic system dedicated for safe navigation and for the Combat System needs, thereby ensuring that all ship subsystems use a reliable data set.

The Navigation System is interfaced with the following main subsystems:

- Combat Management System
- Communications
- Combat System sensors and weapons
- Platform Monitoring System

The proposed Navigation System shall provide continuous and accurate navigation information required for safe sea keeping and by the Combat System.

The Navigation System is compliant with IMO performance standards regarding navigation equipment as a minimum when no other performance is specified or required by the Combat System.

The navigation system includes the following subsystems:

- Non-Electrical/Electronic Navigational Equipment,
- Navigation lights,
- Radio navigation System,
- Basic Navigation Sensors System,
- Inertial Navigation System,
- Navigation control monitoring

421 - Non-Electrical/Electronic Navigational Equipment

General Description

Whistles and Sirens System

Sirens are supplied in accordance with the classification rules and the SOLAS convention. A whistle is also supplied.

Magnetic Compass System

A standalone magnetic compass for overhead mounting with mirror is supplied.

The magnetic compass indicates the ship's magnetic heading.

422 - Navigation Lights

Applicable Documents

COLREG

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General Description

The navigation lights and lighting on the upper deck are controlled from the bridge.

The navigation lights system comprises the following items:

The navigation lights, in accordance with the COLREG requirements,

The control panel of the navigation lights and the Human-Machine Interface (HMI). This is formed by a mounting plate comprising the light controls and panel lights distributed on the ship's graphic display.

423 – Radio Navigation SystemGeneral Description**GNSS System**

The system is composed of two (2) marine D-GPS Coarse Acquisition receivers and Two (2) antennas which shall display and provide mainly the position, the Speed Over Ground and the Course Over Ground.

AIS

The system is composed of one (1) secured Automatic Identification System (AIS) which automatically exchanges messages with other ships by VHF radio. With this system, the ships get real time information about each other, for instance: name, identity, position, etc.

AIS tracks are also provided to the CMS for tactical picture compilation.

424 – Basic Navigation SensorsGeneral Description**Gyrocompass**

The IMO compliant gyrocompass provides heading of the ship as reference data.

Pitch and roll motion sensor

The pitch and roll motion sensor is specially designed for measuring the movements of marine platforms. The device integrates 2-axis sensors to measure the pitch and roll of the ship.

Two Roll repeaters and two Pitch repeaters are also provided.

Heading Repeaters

Three (3) Bearing repeaters fitted with alidades allow optical aiming at an identified landmark or ship. This measurement shall give a true bearing angle.

One (1) heading repeater for the steering position is provided.

One (1) console repeater compass for the bridge is also provided.

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Electromagnetic Log

The Electromagnetic Log (EM Log) system comprises the following items:

- An EM transducer and its hull fittings,
- An electronic central processing unit,
- One associated speed repeater.

The EM log indicates the relative speed of the ship over the water in the fore and aft direction with respect to the ship's longitudinal axis and distance covered by the ship. The EM Log is interfaced with the navigation network.

Echo sounder

A dual frequency echo sounder with one repeater is provided in accordance with the classification rules and the SOLAS convention.

The HMI of the echo sounder is located in a console on the bridge and is interfaced with the navigation network.

Meteorological system

The meteorological system is composed of the following items:

- One central processing unit for weather display and wind sensor selection,
- Two wind speed and direction measurement sensors (anemometer and wind vane) manually switched,
- Weather sensors: a barometer and an air humidity and temperature measurement sensor,
- Two (2) wind display.

The meteorological system is interfaced with the navigation network.

Time reference system

A timing reference system is integrated on board the ship. It indicates the GMT and can indicate the local time after inserting an offset.

Four displays distributed in the living areas show the hours and minutes (h:m); Three displays in the operational areas also show the seconds (h:m:s).

The seven clocks are distributed as follows:

- Three on the bridge,
- One in the Commanding Officer room,
- One on the SCC main switchboard,
- One in the wardroom,
- One in the dining hall.



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425 - Inertial Navigation Unit

General Description

An Inertial Navigation Unit (INU) dedicated to combat system specific needs is also included in the navigation system. The INU shall continuously provide position, velocity, attitude and attitude rates.

This product is IMO compliant as a gyrocompass. The INU computes the best estimate of position, heading, roll, pitch and inertial speed. The INU is updated:

- In position thanks to the GNSS system,
- In speed thanks to the EM Log.

The INU can also be manually updated in position and speed thanks to its Command and Control Unit.

426 – Navigation Control Monitoring

General Description

Navigational Data Distribution System

One (1) navigation IP network is supplied to provide reliable navigation data exchange between Integrated Bridge subsystems.

Navigational Radar System

The navigation radars system consists of one X-band radar and one S-band radar.

Both navigational radars are equipped with an ARPA (Automatic Radar Plotting Aid). Both aerial are selected independently from the ARPA consoles. The ARPA are interfaced with the AIS in order to ensure the display of AIS tracks.

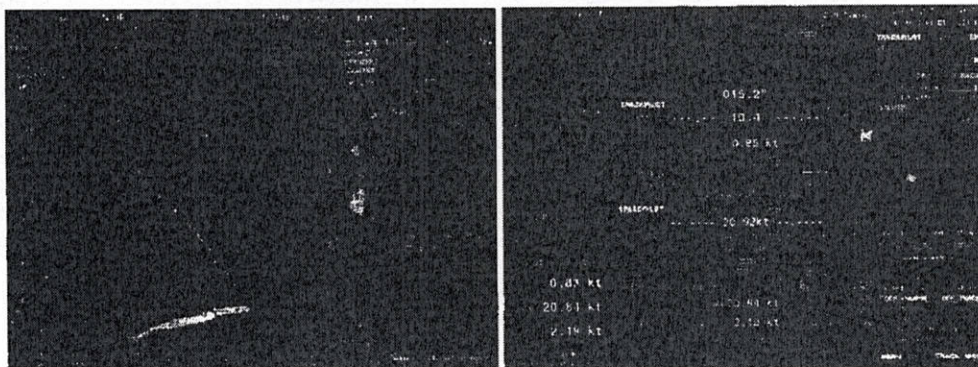


Figure 15. Example of radar image & ARPA Tracks - Conning

One of the radars is equipped with a transmitter-receiver of minimum 12.5 kW and the other with a transmitter-receiver of minimum 25 kW.

The navigation radars are controlled and monitored from the bridge.

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Electronic Chart Display Information System (ECDIS)

The electronic chart system is composed of two ECDIS units, which are designed to meet the latest requirements of the IMO and the IEC61174 v4.0.

The 2 ECDIS workstations are located on the bridge. Each one is equipped with a flat screen. One is integrated into the Officer of the Watch's console and enables navigational control. The other is located at the chart table and acts as a back-up unit; it also allows the preparation of the route and planning.

The ECDIS has the capacity to process different chart formats (ENC S57/S63, CM93 C-MAP, ARCS). Navigation paper charts and electronic charts are BFE.

The ECDIS can also display different formats of charts in automatic mode; it integrates the complete route planning functions, route monitoring and alarms and the display of AIS tracks and video radar.

Automatic Pilot System

The IMO compliant automatic pilot assists the operator in navigation and manoeuvring tasks. It allows the course of the ship to be controlled.

The automatic pilot user interface is available on the ECDIS consoles; the operating mode is selected manually from the Helmsman console on the bridge.

The automatic pilot is interfaced with:

- The steering gear;
- Navigation sensors; and
- The ECDIS.

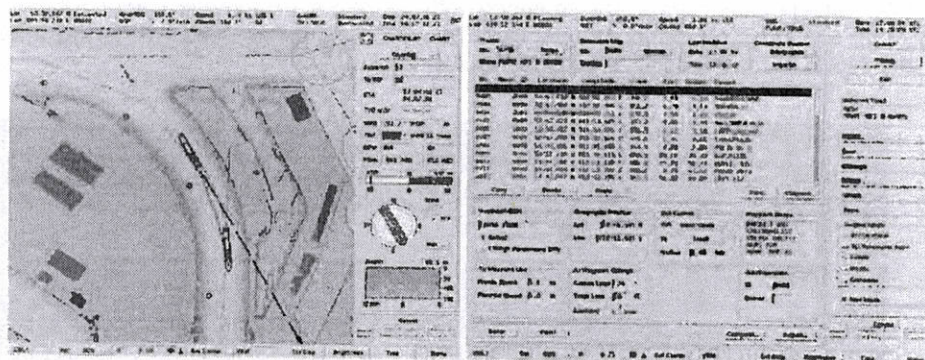


Figure 16 Autopilot – Route Monitoring and Digital track planning

Conning

One (1) conning display is supplied (summary display of navigation data). The Conning function provides an overview of the navigational situation of the vessel.

BNWAS

One (1) BNWAS (Bridge Navigation Watch Alarm System) is supplied.

The BNWAS shall monitor the Bridge activities and shall detect operator disability which could lead to marine accidents.

Sound Reception System

One (1) Sound Reception System is supplied.

In accordance with SOLAS regulations, the Sound reception system is an acoustical electronic navigational aid that enables the Officer of the Watch in charge of the navigational watch to hear and determine the direction of external sound signals from other ships or foghorns, from within a totally enclosed Bridge.

430 - Internal Communications

Internal civil communications on board (including regulatory communications) are distributed as follows:

- Telephone systems including:
 - Manoeuvring intercoms,
 - Automatic telephone system,
 - The sound-powered telephone system (SPT),
- The entertainment system,
- The system for the distribution of orders and warnings,
- The video surveillance system.

432 - Telephone SystemsGeneral Description**Manoeuvring Intercoms**

The intercom system is compliant with the BV/SOLAS rules and also offers a complete range of configurations (point-to-point communication, conference, etc.) corresponding to the operational requirements of the ship.

It allows point-to-point communications or simultaneous group communications to be established. In external areas, the terminals are water resistant and are designed to be used in difficult conditions. In noisy areas, the terminals are set within soundproofed telephone booths.

Automatic Telephone System

The ship is equipped with an IP telephone subsystem.

The telephone communications are managed by an IPBX.

The subsystem comprises 27 IP telephones.

RJ45 sockets are distributed throughout the ship as follows:

- 27 sockets distributed between officers' cabins, gangways and common areas,

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Sound-Powered Telephones (SPT)

The independent emergency telephone network (with no energy contribution) is compliant with the requirements of the SOLAS convention and is adapted to operational needs.

There are 3 independent SPT networks on board:

- The SPT network for manoeuvres,
- The SPT network for the chart table,
- The operational SPT network.

434 - Entertainment SystemGeneral Description

In order to provide entertainment on board, the following items of equipment are installed:

A receiving antenna for TV/AM/FM,

- A satellite television antenna (BFE),
- 9 plugs for TV/AM/FM in wardroom, dining hall and cabins.
- LCD CD/DVD televisions in the wardroom and the Commanding Officer room.

436 - Alarm, Safety and Warning SystemsGeneral Description**Public Address and General Alarm System**

A system for the distribution of orders and warnings is provided in accordance with the classification rules and the SOLAS convention.

This system allows messages to be distributed independently in different areas of the ship, either simultaneously in all areas or independently:

The areas in which the messages will be distributed are:

- The living quarters;
- The operational areas and engine room; and
- External zones (AVIA, RHIB...).

The power and number of loudspeakers are appropriate for each type of space.

Fire Alarm and Detection Systems

When a fire is detected, the fire alarm and location is activated and displayed in the bridge. The fire detection and alarm system includes the following elements:

The fire detection and alarm systems include the following items:

A fire detection control unit situated on the bridge,

Fire detectors distributed throughout the ship.



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The different types of fire detectors are as follows:

- Smoke detectors,
- Flame detectors,
- Temperature detectors.

In addition, manual fire alarm triggers are also distributed throughout the ship

"Man Overboard" Alarm System

The ship has a "man overboard" alarm system with 3 manual calling-in points distributed on the ship.

Sick Bay Call System

A call system is installed in the sick bay. It consists of a push-button installed next to each patient's bed and an alarm in the bridge.

Audible and Visible Alarms in the Engine Rooms

The engine room is equipped with 2 visual and audible alarm displays. These are activated if required. These displays are equipped with two revolving warning lights, associated sounding devices and 6 double-sided pictograms.

439 - Recording and Television Systems

General Description

The ship is equipped with a Closed Circuit Television (CCTV) system, which shows the engine room, the AVIA area and the RHIB rear area.

The CCTV system consists of the following elements:

- 4 internal fixed black and white and colour cameras (surveillance of the engine room),
- 3 external fixed black and white and colour cameras for the surveillance of the flight deck and the RHIB area,
- Three screens:
 - 1 in the Avia/RHIB console,
 - 1 in the PMS console,
 - 1 in the Engine PC console.

In the bridge, three microphones are used to record audio conversations:

- 1 microphone for the operations area;
- 1 microphone for the Avia console; and
- 1 microphone for helmsman.

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440 - External Communications

External communications consists of:

- Regular and civilian communications; and
- Operational communications.

441 - Regular and Civilian Communications

General Description

The regular and civilian communications consists of a Global Maritime Distress and Safety System (GMDSS) which is in compliance with SOLAS requirements for zone A3.

The GMDSS is fitted on the bridge at the Communication console.

442 - Operational Communication System

General Description

The communications system provides internal and external operational communications capabilities and the management of these capabilities.

The frequency bands covered by the radio equipment range from HF to UHF. A satellite terminal provides another long range link.

The communications system provides ship-ship, ship-shore, and ship-aircraft communications.

The communications system provides the following services:

- Audio services over HF, VHF, and UHF radios;
- External telephony via SATCOM and shore lines;
- Data exchange services;
- Tactical Data Link in the UHF and HF band, through 2 modems.

The operational communications system is composed of the following major subsystems:

- External communication equipment (HF, VHF, UHF radios, SATCOM);
- Telephone;
- Shore link;
- Tactical Data Link

Note: The LAN subscribers (user terminals-PC, printer, mail server if needed...) must be provided by the Buyer as BFE.

The following figure represents the architecture of the proposed communications system.



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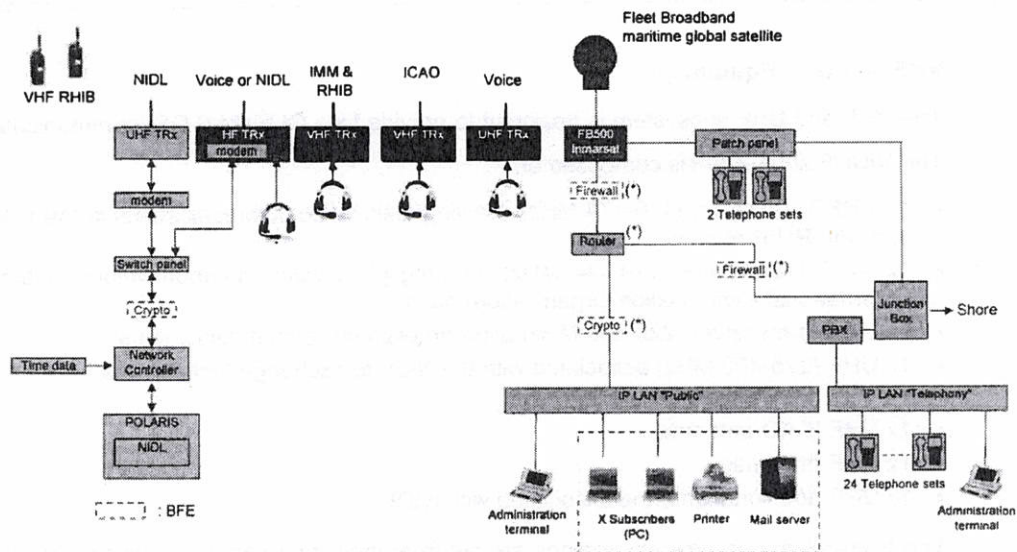
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(*) : Must be defined according to the communications infrastructure of the Buyer (Interoperability)

Figure 17. Operational Communications System Architecture

HF Equipment

The HF radio equipment enables Beyond Line of Sight (BLOS) voice communications.

The HF equipment is composed of:

- 1x 500 W transceiver;
- 1x Antenna Tuning Unit and a whip antenna;

This equipment allows:

- Plain voice communications in the HF band (1.5 MHz to 30 MHz);
- Or tactical data exchange with NiDL.
- The exchanges (voice or data) cannot be simultaneous.

The transceiver parameters settings are controlled from its front panel. The HF radio is operated from the communication console area in the bridge.

VHF and UHF Equipment

The VHF and UHF subsystem is designed to provide Line Of Sight (LOS) communications.

The V/UHF subsystem is composed of:

- 1x VHF Transceiver (136-174 MHz) allowing plain voice communications in the IMM band and with RHIB at sea;
- 1x VHF Transceiver (118-144 MHz) allowing plain voice communications in the ICAO (International Civil Aviation Organization) band;
- 1x UHF Transceiver (225-400 MHz) allowing plain voice communications;
- 1x UHF (225-400 MHz) associated with the NiDL to exchange tactical data;
- 1x VHF IMM antenna;
- 1x VHF ICAO antenna;
- 1x UHF antenna;
- 1x UHF additional antenna associated with NIDL.

The transceivers parameters settings are set from their front panel. For voice operation, the radios are operated from one position in the bridge:

- VHF IMM from OOW position or from AVIA position
- VHF ICAO from AVIA position
- UHF from combat system area

2 portables VHF transceivers (136-174 MHz) are delivered for the RHIB.

Satellite Transmissions

The Satellite communications system (SATCOM) is composed of one INMARSAT (BGAN) station.

The station provides simultaneous data and telephone communications via satellite through the Broadband Global Area Network (BGAN). Subscription to INMARSAT services must be provided by the Buyer.

The system allows:

- Voice communications with the two telephone sets connected to the Satellite terminal through a patch panel;
- Data exchanges from the user terminals of the "Public" IP LAN.

The voice communications are operated from communication console area in the bridge.

The "Public" IP LAN comprises 24 sockets.

Automatic telephone subsystem

See paragraph 432.



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Shore Link

The shore link system allows the following services when the ship is alongside the quay:

- Data exchanges from the user terminals of the IP LAN;
- Telephone from IP telephone sets.

Note: The two analog telephones can be used in back-up to ensure a shore link in case of IP telephones failure.

Tactical Data Link

The communications system is fitted for a tactical data link NiDL[®] in the UHF or HF band.

The CMS performs the tactical situation compilation using information received from the tactical data link.

NIDL uses resources provided by the communications system:

- Either a dedicated UHF radio combined with a modem;
- Or the HF radio with a modem.

The two NiDL frequency capacities (UHF or HF) are exclusive one from another. Switching between UHF and HF is realised manually and need reconfiguration of the crypto device and the network controller.

Crypto Devices

The Communications system allows the integration of the following number of Crypto devices (BFE):

- IP crypto:1 set
- Tactical Data Link crypto:1 set

Crypto equipment (and associated devices such as keys ...) is not remotely controlled.

Crypto equipment is considered to be products from Crypto AG supplier.

450 - Surveillance Systems (Air and Surface)

452 - Surveillance Radar

General Description

The ship is equipped with a Scanter 6002 2D surveillance radar.

The radar transmitter-receiver is X-band, 2D, fully coherent pulse compression radars providing Normal Radar video as well as MTI (Moving Target Indicator) video simultaneously.

The antenna is housed in a radome (single mast). This radome both protects the antenna and, because it is supporting the unique mast, offers to the radar 360° coverage in azimuth.

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The electronic cabinets are installed in technical room just below the antenna in order to reduce wave guide length.

The architecture of the surveillance radar system is based on:

- An Antenna System comprising:
 - A 10 ft antenna;
 - An antenna control unit;
 - Turning unit, rotary joints and azimuth encoder;
- A Scanter 6002 Transceiver;
- A workstation installed on the Bridge;
- Auxiliary components:
 - A Man-Aloft Switch;
 - A maintainer's laptop.

The command and control of the surveillance radar is performed from one POLARIS® Multi-function console.

The workstation is used for the command and control of the surveillance radar as a backup of the command and control from a POLARIS® console.

The workstation offers ARPA functions allowing tracking from the radar and the display of the helicopter approach sector.

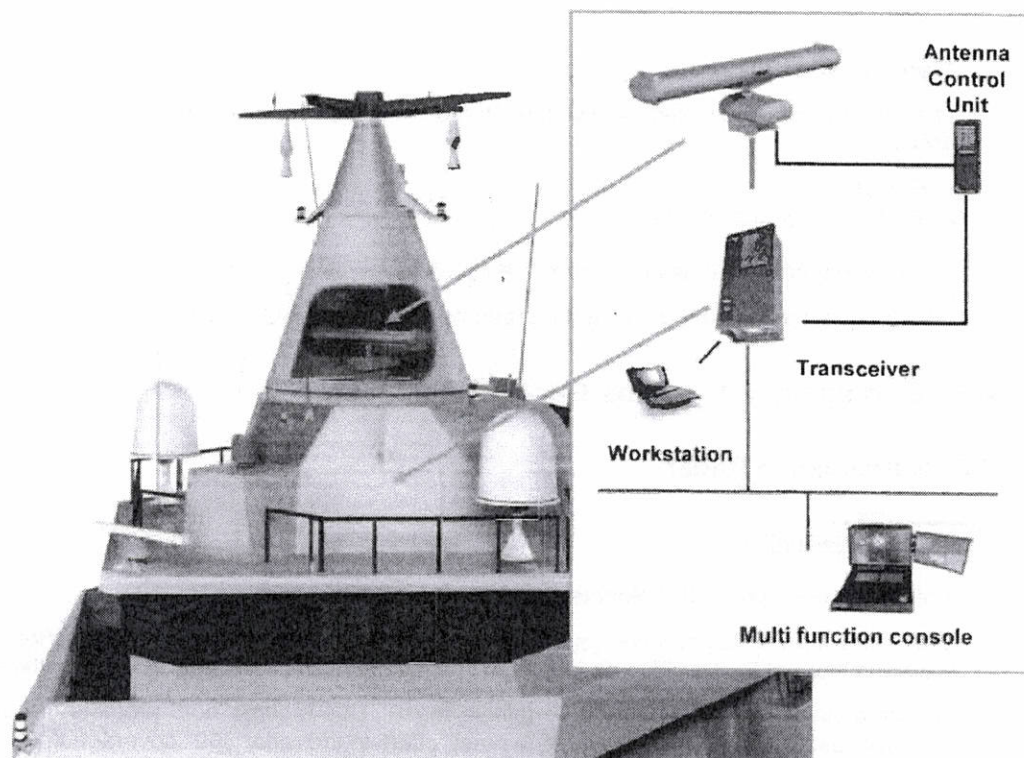


Figure 18. Surveillance Radar

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455 - Identification Systems

General Description

IFF System (Identification Friend or Foe)

The ship is fitted with an IFF transponder.

The system supports IFF modes 1, 2, 3/A.

The system is composed of:

- One IFF transponder unit;
- One IFF transponder Command And Display Unit;
- 2 IFF transponder antennas.

The system is operated from a command and display unit on the bridge.

Direction finder

The ship is fitted with a direction finder (COTS) covering VHF and UHF bands.

Note: The AIS (Automatic Identification System) is described in the Navigation System.

457 – Thermal Imaging System

General Description

The ship is equipped with a Vigy Engage Thermal Imaging System (TIS) from SAFRAN installed at the top of the radome.

This item of equipment is capable of providing surveillance day and night and allows a target close to the ship to be acquired and tracked.

The TIS is used for:

- Optical surveillance;
- Short range recognition and identification thanks to an optical continuous zoom;
- Tracking of low speed target;
- Pointing to a target designated by the CMS; and
- Search And Rescue (SAR) operations.

The TIS consists of three units:

- The sensor head;
- The control electronic unit; and
- The control panel and joystick.

The TIS comprises the following sensors:

- One cooled IR camera;
- One TV colour camera;
- One Laser Range Finder.

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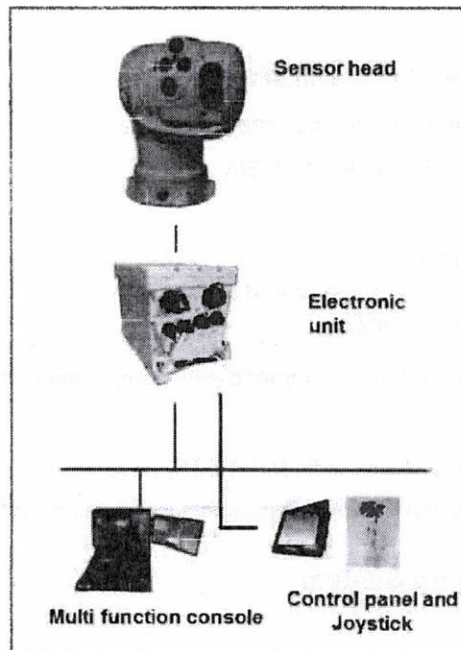
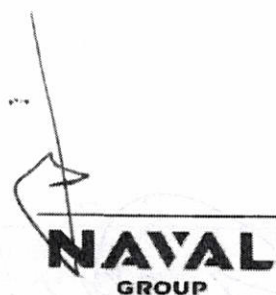


Figure 19. Thermal Imaging System



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500 - Auxiliary Systems

500 – General

General Description

The auxiliary systems comprise the installations necessary for the operation of the propulsion system and other main systems and, more generally, the ship itself.

These installations mainly include fluid circuit installations and mechanical installations.

The circuit installations are largely formed of pipes, pumps, filters and exchangers, which are assembled together, in certain cases in complete units.

The circuits use different technologies depending on the circuits installed on board and, in particular, depending on the type of fluid transported by these circuits:

- Ventilation, heating and air-conditioning circuits,
- Seawater circuit,
- Freshwater circuit,
- Fuel oil and lubricant circuits,
- Air circuit.

The auxiliary installations are generally controlled manually from the console situated at the bridge or locally.

503 - Pumps and Ejectors

General Description

The pumps and ejectors are compliant with industrial standards and are adapted in order to be able to operate in a marine environment.

The pumps are manufactured using a material that is compatible with the materials of the pipes and transported fluids.

The rotary pumps can be of a vertical or horizontal design.

All vertical pumps have thrust bearings in accordance with the manufacturer's standard.

The displacement pumps are equipped with standard safety valves. In the event of pumps transporting flammable liquids, the discharge from the unloading valve will normally be directed towards the suction part of the pump.

505 - General Piping Requirements

General Description

All of the pipes are designed in such a way to optimize the operation of the system by taking into account the layout of pipes and accessibility of the components (flanges, joints, etc.).

The low points of the circuits are equipped with drainage devices to purge and dry out the circuits. The drainage devices are generally equipped with screw caps.

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The high points of the circuits are equipped with devices for purging air in order to allow the circuit to function normally.

Hoses or couplings provide a connection between the units or pumps mounted on resilient materials and the fixed pipes.

In the living quarters, with the exception of areas reserved for sanitary facilities, the pipes extend behind the bulkheads. When valves are installed behind the bulkheads, these are located in an appropriate manner. As a general rule, the removable panels set in the bulkhead allow easy access.

The installation of pipes carrying water or oil above or behind the switchboards or electrical equipment is avoided as much as possible.

Material of the pipes

The materials used for the pipes are compliant with the rules of the Classification Society. They are selected in accordance with the practices of the Seller or of the Shipyard as far as manufacturing is concerned, and are subjected to regulatory tests in accordance with their category.

The following materials are used in particular, according to the type of pipe:

- Medium-pressure compressed air Stainless Steel
- Low-pressure compressed air Copper
- Fuel oil Black steel (crude and normally full)
- Fuel oil Stainless steel (normally empty and purified)
- Jet Fuel Stainless Steel
- Lubricants Black steel
- Used oil and sludge Black steel
- Seawater cooling Galvanized steel
- Ballasts Galvanized steel
- Scuppering Galvanized steel
- Grey water Galvanized steel or BM push-it system
- Black water Galvanized steel or BM push-it system
- Hot and cold fresh water Copper
- Bilge main Galvanized steel
- Fire main Galvanized steel

The materials of the systems that do not appear in the above list are compliant with the Seller standards and with regulatory requirements.

The thickness of the pipes complies with the Seller or Shipyard's standards and with regulatory requirements for the considered category of pipe

Dimensioning of the pipes

The diameters of the pipes are established from the average flow of the circuit, taking into account the maximum authorized speed of the fluid with regard to the Seller's standard practice. The closest standard dimensions are selected after calculating the theoretical diameter.

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For the fire and bilge main pipes, the diameters are established in accordance with the applicable regulations of the Classification Society.

The speeds authorized in the pipes comply with the standards of the Seller. The pipes of the hydraulic circuits comply with the instructions and/or recommendations of the hydraulic equipment suppliers.

Flushing

Measures are taken on the hydraulic, lubrication and fuel circuits in order to enable flushing operations to be carried out on the aforementioned circuits during commissioning of the installations by the Shipyard.

Filters and Strainers

The filters and strainers are installed so as to allow inspection, cleaning or replacement of the strainer screens, the strainer protection cages or the filter cartridges.

Heat Exchangers

The installed heat exchangers, or those for the main or auxiliary motors, comply with the Seller's standards.

The heat exchangers on the auxiliary circuits comply with the Shipyard's standards, or are selected by the Seller.

The heat exchangers comprise sacrificial anodes as per the Seller's recommendations.

Miscellaneous equipment

The pressure gauges, temperature indicators, transducers, switches, etc. installed on the equipment comply with the Seller's standards.

All piping is fitted with accessories as per the Seller's practices.

Loading/unloading plugs

Identification plates enable easy identification of all discharge/filling connectors. They are located on the port side.

All loading points are designed in accordance with the Seller's standards. The connection valves are manually and locally operated.

The following loading points are located at the stern:

- Dieselone filling connector
- Lubricantsone filling connector
- Waste waterone discharge connector (MARPOL)
- Sludge/Used oilone discharge connector
- Jet fuelone filling connector

One fresh water loading point with a filling connector is located at the bow.

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506 - Overflow, Air vents and Measurement Appliances

General Description

Tank level gauging systems

The remote measurement system enables the levels in the tanks to be measured via pressure sensors. The following tanks are connected to the remote measuring system:

- Water ballast tanks;
- Fresh water tanks;
- Diesel oil tanks (storage, overflow and feed tank);
- Jet fuel tanks; and
- Lubricant tanks.

Manual gauging

A manual measurement system enables the levels in the following tanks to be checked:

- Water ballast tanks;
- Fresh water tanks;
- Diesel tanks;
- Lubricant tanks;
- Jet fuel tanks; and
- Oily bilge water tank.

Air vent

Air vents are generally fitted to the upper sections of all tanks, in accordance with the requirements of the Classification Society. The air vent pipelines are of the type and size recommended with appropriate pipes coupling.

The air vent pipelines for the Diesel oil tanks lead to open air above the watertight deck and are fitted with dampers.

The air vent pipelines for the grey and black water tanks lead to open air above the watertight deck and are fitted with air inlet valves.

The air vents for the fresh water tanks lead to open air above the watertight deck and are fitted with a filter.

The JA-1 tanks are each equipped with discharge P/V valves and flame arresters installed in accordance with the requirements of the Classification Society.

Ventilation dampers

All air inlet and exhaust dampers are closed via steel trap doors or valves. Dampers that are exposed to the elements are of aluminum construction.

Elbow, goose neck and turn cap ventilation openings are in steel construction, and are fitted with a closure device, in accordance with requirements.

The inlet of the engine compartment and emergency diesel generator ventilation circuits are fitted with spray separators.

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507 – Piping System Marking

General Description

The markings on the fluid systems consist of markings:

- On the isolating valves and valves,
- On visible piping, with self-adhesive arrows to identify the type and direction of flow of the fluid,

For safety marking, it will be referred to the Classification Society directives.

508 - Thermal Insulation for Piping and Machinery

General Description

Appropriate thermal insulation and/or fire protection is fitted to the piping in accordance with the regulatory requirements.

The insulation materials used are chosen by the Shipyard as per the regulations of the Classification Society.

Pipes with outer surfaces that exceed a temperature of 55°C are insulated in order to ensure that the temperature on the outside of the insulation does not exceed 55°C.

510 - Climate Control

General Description

The heating, ventilation and air conditioning system enables the following functions:

- To maintain internal ambient conditions (for the comfort of persons on board and to provide correct running conditions for the equipment);
- To maintain internal air quality in terms of temperature, relative humidity, fresh air flow and air change;
- To ensure fresh air filtration;
- To contribute to ship safety (particularly regarding fire propagation and smoke propagation).

This system comprises:

- Heating subsystem,
- Ventilation subsystem,
- Engine room Ventilation subsystem,
- Air conditioning subsystem,
- Chilled water subsystem.

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Air conditioning system is able to maintain in the accommodations, the following conditions:

Temperatures	Minimum	Maximum
Ambient temperature inside accommodation spaces	+20°C	+27°C
Ambient temperature inside technical room with electric equipment, stores and workshops	+15°C	+35°C
Ambient temperature inside engine rooms and auxiliaries spaces	+2°C	+45°C

511 - Heating System

General Description

Heating is performed by electrical heaters located in the air conditioning units or in conditioned air supply ducts.

Control, Monitoring and Automation

The level of heating depends on the temperature registered by the appropriately-located sensors, and on the required temperature.

The heating can be switched on and off locally. Emergency shut-downs are controlled from the engine control room and the bridge. The air conditioning fault alarms are relayed to the PMS.

Thermostats specific to one zone or space enable the heating to be regulated.

512 - Ventilation System

5121 – Natural Ventilation

General Description

Areas that are not ventilated mechanically or air conditioned are naturally ventilated.

Ventilation occurs via air grids, existing openings or by the opening of a door, trapdoor or valve.

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5122 - Mechanical Ventilation SystemsGeneral Description

The following premises are mechanically ventilated:

- Helicopter shelter
- Avia Tech. room/store/sick bay
- Battery charging room
- SCA store
- Laundry
- Technical room H3
- Fwd Auxiliary room
- Workshop Tech room H1
- Storeroom H2
- Steering gear
- Bottom Technical space C2020
- Bottom Technical spaces D2010
- Bottom Technical spaces D2030
- Air lock F0010
- Air lock F0011
- Bottom Technical space C2020
- Bottom Technical spaces D2010
- Bottom Technical spaces D2030
- Air lock F0010
- Air lock F0011

Ventilation system comprises:

- An axial or centrifugal fan with trapezoidal belt drive or directly driven,
- Rectangular or circular ducts for fresh, treated and foul air with:
 - Thermal insulation;
 - Acoustic insulation;
- The necessary air removal and distribution grids;
- The necessary smoke and fire dampers;
- Miscellaneous accessories.

All the air inlets are equipped with droplet separators or goose necks.

The extraction fans are fitted in sufficient numbers in each zone.

The galley is fitted with an extraction hood.

The sick bay is fitted with a specific extraction system.

Antifreeze devices are not provided.



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Control, Monitoring

Ventilation systems are provided with local control equipment. The ship's ventilation systems may be shut down locally. A ventilation emergency shut-down is provided according to requirements: the helicopter hangar and jet fuel space fans may be shut down remotely from the bridge.

513 - Engine Room Ventilation SystemGeneral Description**Main Engine room ventilation**

The Engine Room is fitted with two air intake fans with an air flow of approximately 65,000 m³/h, which provide ventilation for the engine compartment. Each fan may operate at two rotation speeds, depending on the cooling load.

The design of the engine compartment ventilation circuit meets the requirements of the BV rules.

Air is naturally extracted from the space, due to the excess pressure created by the inflow ventilation.

The air inlets are fitted with spray separators.

Emergency generator room ventilation

Ventilation of the emergency diesel generator compartment is provided by an air intake fan with an airflow.

Air is naturally extracted from the space, due to the excess pressure created by the inflow ventilation.

The air inlets are fitted with spray separators.

Control, Monitoring

The on/off controls for the engine compartment fans and emergency diesel generator compartment fans are operated from the local control console or directly from the bridge console.

An engine compartment ventilation emergency shut-down facility has been provided in accordance with the requirements of the Classification Society.

The fan dampers are open in normal situations, and automatically closed when an emergency shut-down is initiated from the bridge or the engine control center.

In the event of a fire in the engine room, the compartment ventilation is automatically shut down, and the fire dampers are closed before the fire protection system for the space is activated.



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514 - Air Conditioning System

General Description

Air conditioning is ensured by Air Conditioning Units (ACU) installed in the technical spaces.

The chilled water circuit provides the cooling power required for each of the air conditioning and refreshing units:

- Bridge and Technical room F1 1 ACU
- Technical room E3 and radome 1 ACU
- Deck 02 and 01 rooms 1 ACU
- Deck 00 and 10 accommodations 2 ACU
- Main switchboard room 2 Refreshing Units
- Aft Technical rooms and accommodations 4 Refreshing Units
- Ammunition spaces 2 Refreshing Units
- Technical room D1 1 Refreshing Units

The ventilation and air conditioning circuits are designed in accordance with the Seller's practices.

In general, circular ducts are used. Alternatively, ducts of rectangular section may be used. All ducts are fitted in the appropriate way, with airtight seals and connectors connected to the fans.

Temperature of common areas and other accommodation spaces is only guaranteed when doors and windows are closed.

The galley is considered to be a common area, and is designed without cooking equipment in operation.

Control, Monitoring and Automation

One ambient-temperature thermostat is provided for each Air Conditioning Unit. Emergency shut-down is initiated from the PMS. The air conditioning general fault alarms are relayed to the PMS.

516 - Refrigeration System

General Description

The chilled water system provides the required cooling capacity for the air conditioning units and if applicable for the detection, weapons and platform systems.

Air conditioning is provided by a chilled water plant, composed of two independent circuits, each one providing 50% of the global need.

The chilled water production unit which ensures refrigeration is located in the engine compartment.

This primarily consists of two (2) compressors, two (2) sea water-cooled condensers, one (1) evaporator, dampers, pipelines, sensors, instruments and an automatic power variation device, enabling precise temperature control.

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Main performances are listed below:

- Refrigerating fluid: R134A or equivalent
- Refrigerating capacity: 2x 125 kW (approx)
- Maximum sea water temperature at inflow: 34°C
- Chilled water temperature at outflow: 6 °C

Two electric circulating pumps ensure the circulation of fresh water.

Sea water circulation is provided by the auxiliary cooling system.

The chilled water supply to the Air Climatic Units (ACU), Refreshing Units (RU) and other specific equipment using chilled water, is done by a main manifold for supply and return. Relevant branches on the loop manifold ensure the supply to the cold batteries. Equilibrating accessories and isolating equipment are provided.

The chilled water manifold is installed and insulated in accordance with the Seller's or shipyard's practices.

The circuit comprises the pipelines, connectors, valves, expansion and temperature regulation devices necessary for the normal operation of the whole system.

Control, Monitoring

The chilled water system is fitted with local control and monitoring devices. The general fault alarms are relayed to the PMS.

520 - Seawater Systems

The sea water fire-extinguishing system consists of two (2) pumps connected to a main pipeline. It supplies the fire hydrants, as well as other appliances, via outlets from this main pipeline.

521 - Fire Main

General Description

The fire main is pressurized by one of the two 80 m³/h pumps, and supplies:

- The fire hydrants located on board,
- The ammunition magazine and helicopter shelter sprinkler systems.
- The AFFF unit providing protection to the flight deck, the jet fuel area and the paint store,
- The ballast water tanks,
- The two (2) bilge system hydro ejectors.

The fire main also supplies the reverse osmosis unit in emergency mode.

In an emergency situation, the fire main may be directly fed by the water gun pumps.

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Fire pump specifications:

- Number 2
- Type Centrifugal
- Capacity Approx. 80 m³/h
- Operating pressure..... About 7 bars

Control, Monitoring

The "fire" pumps may be started up or shut down either locally or remotely via the PMS. They may also be monitored both locally and remotely via the PMS.

The fire main valves are operated either locally and manually, or remotely, in accordance with regulatory requirements.

Under normal operating conditions, one of the fire pumps operates continuously, with a constant outlet into the sea. The second pump starts up automatically if "low pressure" is detected, and shuts down once the "low pressure" signal disappears.

The fire main pressure level, monitored by a manometer, is relayed to the PMS.

Information exchanged with the PMS:

- Remote start-up/shut-down control of the pumps and valves;
- Operational status of the pumps and valves;
- Any divergence between the order relayed from the PMS and the observed status;
- Status of the local or remote control mode.

522 - Sprinkler System

General Description

The ship is fitted with a sea water sprinkler system. The spaces covered by this system are:

- The ammunition magazine (B0021, B0022);
- The helicopter shelter.

The sea water sprinkler system is directly supplied by the fire main.

The system flow rate complies with relevant standards and Seller's requirements.

Each sprinkler system for the ammunition magazine is fitted with a filter and valves for air testing.

Control, Monitoring

As a rule, the sprinkler system is manually and locally controlled.

In the case of the ammunition magazine, it is controlled and monitored remotely via the PMS.

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524 - Auxiliary Cooling System

General Description

The auxiliary cooling system consists of two pumps, which provide the chilled water unit with sea water.

Pump specifications:

- Number 2
- Type Centrifugal
- Capacity Approx. 50 m³/h
- Operating pressure About 2 bars

Control, Monitoring

The pumps are monitored and controlled locally.

The pumps are started up and shut down from the cooling unit control panel.

526 - Scuppers and Deck Drains

General Description

The drainage system consists of multiple drain outlets, which are connected to a collection network, thus ensuring the removal of water.

The number/type and location of the drain outlets on board the ship comply with the Seller's practices and the stipulations of the Classification Society regulations.

The flight deck drainage system is not connected the other evacuation and bilge systems.

527 - Water Gun System

General Description

The ship is fitted with two water guns, located on wings at the rear of the superstructure under the bridge deck. Two electric pumps supply sea water to the two guns.

Water gun pump specifications:

- Number 2
- Type Centrifugal
- Capacity Approx. 250 m³/h
- Operating pressure About 10 bars

The suction valve is manually operated, and its position is monitored by a position sensor.

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Control, Monitoring

The pumps are remotely controlled from the control boards located on the bridge.

A push-button on the pumps' starter kit, and another located on the bridge, enable the emergency shut-down of the pumps.

A fault alarm is relayed back to the PMS.

528 – Plumbing Drainage (Grey & Black Water)Applicable Documents

SOLAS Convention 2009, chapters II, IV and V

MARPOL Convention 73/78 and IMO MEPC 159(55)

General Description

The grey water/black water system enables:

- The collection and storage of grey water,
- The collection and storage of black water,
- The treatment of black water,
- The discharge of stored black water, grey water and sludge at dock.

Black water treatment plant specifications:

- Number 1
- Type EVAC MBR 32C
- Hydraulic loading 5,900 l/day
- BOD 5
- Loading 3 kg/day

Black water is collected by a vacuum system, and treated by a treatment plant, in accordance with the OMI MEPC 159(55) regulations.

The sludge is then either discharged, as per the applicable provisions of the OMI regulations, or stored in a dedicated tank.

Grey water is collected either by vacuum, or by a gravity system, according to the location of the sanitation facilities on board the ship.

The ship is fitted with an EVAC COMBINED MBR 32 black water plant that can treat 5,900 L/day. This plant complies with the MEPC 159(55) resolution. It is fitted with a hydrogen sulphide (H₂S) detection system, with an alarm light located in the plant area, which is relayed to the bridge.

Grey water from the galley passes through a grease separator, before going to the storage tank.

The treatment and storage volumes meet the CLEANSHIP requirements.

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Control, Monitoring

The system is controlled and monitored via a local control panel.

The general fault alarms are monitored via the PMS. The treatment plant is fitted with a hydrogen sulphide (H₂S) detection system with a local alarm light, which is relayed to the bridge.

The tank level is monitored locally.

The system operates automatically, once manually started by the operator.

529 - Drainage and Ballasting System**5291 - Bilge System**General Description

The bilge system comprises two electric pumps connected to the bilge main, and branch bilge suction pipes that enable each section to be drained. Electric power is supplied to one of the pumps by the emergency Diesel generator.

Bilge pump specifications:

- Number 2
- Type Centrifugal
- Capacity Approx. 60 m³/h
- Operating pressure..... About 3 bars

Two (2) hydro ejectors (5 m³/1 bar) supplied by the fire main, enabling drainage of:

- The chain locker,
- The steering gear compartment.

Control, Monitoring

The bilge tanks are fitted with high water bilge detectors monitored remotely via the PMS.

The suction valves in the lower points are monitored and controlled remotely via the PMS.

Start-up/shut-down of the electric pumps may be effected both manually and locally, and remotely via the PMS.

The bilge pumps shut down automatically after a set time period, depending on the water level readings.

5292 - Ballast SystemGeneral Description

The ballast system consists of one pump connected to a pipe line that runs between the different ballast water tanks to drain the tanks. An hydro-ejector complete the installation..

Each water-ballast tank is fitted with a manually-operated isolation valve.

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533 - Fresh Water Storage and DistributionGeneral Description**Storage**

Fresh water is stored in 2 tanks with a net capacity of about 20 m³ each, thus totaling a capacity of about 40 m³.

An automatic chlorination system ensures that the chlorine level in the storage tanks remains constant.

Distribution

Distribution of fresh water is ensured by two (2) pumps, each providing 100% of the required flow rate.

Equipment specifications:

- Type Distribution Pumps
- Quantity 2
- Nominal flow rate (at 35°C and 36,000 ppm) About 8 m³/h each
- Maximum pressure 5 bars

Hot water Production

Hot water is generated by 6 water heaters located throughout the ship. Precautions are taken to prevent the water from being contaminated by legionella bacteria.

Equipment specifications:

- Type Water heaters
- Quantity 6
- Volume 200, 250 or 300 liters

Control, Monitoring

The distribution units are operated via a local start-up/shut-down control. General faults and tank levels are remotely monitored via the PMS.

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The water-ballast tanks are filled by the fire main.

Water-ballast pump specifications:

- Number 1
- Type Centrifugal
- Capacity Approx. 60 m³/h
- Operating pressure About 3 bars

Control, Monitoring

Following local manual configuration of the network, the water-ballast pump is started up or shut down.

The pump may be started up/shut down locally by an operator, or remotely via the PMS.

The levels in the water-ballast tanks and the status of the pumps are monitored via the PMS.

530 - Fresh Water System

531 – Fresh Water Production System

General Description

The fresh water system produces, stores and distributes hot and cold sanitary fresh water.

The fresh water system comprises:

- Two osmosis units for the production of fresh water;
- A fresh water distribution unit; and
- Heaters for the production and distribution of hot fresh water.

Specification of the osmosis units:

- Type SLCE
- Quantity 2
- Nominal output (l/day/unit) 10,000
- Salinity 1,500 µS max

The osmosis units are fitted with a second filtration stage, which can generate distilled water for the engines.

A dock connection point enables fresh water to be loaded on-board.

Control, Monitoring

The fresh water production units are controlled and monitored locally via the control panel mounted on a common frame.

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Control, Monitoring

The electric pumps are manually-controlled, either locally via a secondary switchboard, or remotely via the PMS.

Emergency shut-down may be initiated from the bridge via an independent control board, or via the PMS.

The tank levels and the status of the pumps may be monitored via the PMS. Alarms are generated for the upper and lower levels.

Data exchanged with the PMS:

- Remote start-up/shut-down control,
- Operating/shut-down/fault status,
- Local or remote control mode.

542 - Aviation and General Purpose FuelGeneral Description

Aviation fuel system is intended to store, treat and distribute Jet A1 type jet fuel to the users on the flight deck.

The jet fuel system enables the following procedures:

- Loading and unloading jet fuel in dock,
- Storage of crude and purified jet fuel.
- Purification of crude jet fuel.
- Distribution of purified jet fuel to users on flight deck,
- Settling of tanks and collection of drip-off,
- Defueling of a helicopter's jet fuel from the flight deck.

The system comprises:

- A TPD (Treatment, Purification, Distribution) plant,
- A pipe system, valves and accessories.

Loading and unloading

Jet fuel loading takes place dock-side at a maximum flow rate of 20 m³/h, via a loading point on the flight deck. The crude jet fuel is discharged into the loading main, and through a filter (80 microns) to the storage tank.

Storage

The ship is equipped with two tanks of total net capacity of approx. 11 m³:

- One storage tank; and
- One service tank.

Protection of those tanks is in accordance with the Classification rules (floodable cofferdam, inert gas in the pipes).



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540 - Fuel and Lubricants

541 - Ship Fuel System

General Description

The Fuel oil system ensures the following functions:

- Loading of Fuel oil at dock,
- Storage of crude and purified Fuel oil,
- Transfer of Fuel oil from one storage tank to another storage tank by means of the transfer pump,
- Purifying crude Fuel oil,
- Distribution of purified Fuel oil,
- Settling in the tanks and recovering any drip-off

The system is adapted to operate with distilled Marine fuel (fuel oil NATO F-76), in accordance with standard ISO 8217-F (1996) or Armada Argentina specific fuel.

Loading

Fuel oil loading takes place dock-side, at a maximum flow rate of 100 m³/h, via a loading point located on deck 01.

The residual Fuel oil is discharged into the loading main and through a 200 µm filter.

Storage

Fuel oil loaded is stored in five (5) storage tanks.

Transfer

A 2.5 m³/h service pump, located in the engine area, enables the transfer of Fuel oil between the storage tanks and the feed tanks.

A 20 m³/h transfer pump, located in the engine area, enables the transfer of crude Fuel oil between the storage tanks. In back-up mode, the service pump will fulfill this function, if necessary.

Purification

The fuel oil is purified by means of a centrifugal separator unit. The filter is located after the service pump. In the event of a failure on the service pump, the hand-operated pump used for settling may be used as a back-up, in this case, the function of purification is by-passed.

Distribution

Two (2) feed tanks supply the propulsion engines and the main diesel generators; a specific service tank supplies the emergency diesel generator. This is filled by the Fuel oil system.

Settling

An observation cylinder enables the settling of the storage and service tanks. The drip-off is first removed and transferred into the drip tank, then transferred to a feed tank, after having passed through the coalescing filter.

The hydrocarbon waste water from the settling process is removed and channeled to the hydrocarbon waste water tank.

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If back-up is required, the hoses allow these two (2) pumps to be interchanged.

The pump operates constantly in the discharge system. A low level sensor, which shuts down the pump, provides a safeguard.

The emergency Diesel generator gear box (located on deck 01) is filled and emptied with a jerry can. The used lubricant is poured into the lubricant tank via a funnel fitted with a tap.

Control, Monitoring

Start/stop of each pump is locally achieved by an operator from the starter box.

Emergency stop can be done from the MSB or from the bridge.

Level sensors are CNL 92.

550 - Air, Gas, and Misc Fluid Systems

551 - Compressed Air Systems

General Description

Service air

The medium-pressure (MP)/low-pressure (LP) compressed air system enables:

- The generating and storage of MP air (30 bars),
- The distribution of MP (30 bars) and LP (8 bar) air.

The system comprises:

- Two (2) MP air compressors in the engine area,
- Storage reservoirs and cylinders,
- A pressure reducer panel 30/8 bars,
- An air dryer filter,
- A pipe system enabling compressed air to be distributed to different usage points.

The specifications of the generated air and the compressors comply with the standards and requirements of the suppliers and regulations.

Compressed air is used to start the propulsion engines and emergency diesel generator, and to supply the LP network.

LP air (8 bars) is generated by feeding MP air through a pressure reducer panel. The LP air is then distributed to the different usage points. The LP compressed air points are fitted with "push-pull" connectors.

Compressor specifications:

- TypeERVOR G05 ELD (or equivalent)
- Nominal flowrate at 30 barApprox. 16.5 Nm³/h
- Maximum used pressure30 bar

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Transfer/Purification/Distribution

The jet fuel distributed to usage points passes through the TPD module at a flow rate of 6 m³/h.

The jet fuel passes through an absorption filter at the plant outlet, and is transferred to the distribution outlet located in a pit on the flight deck. A fuelling hose fitted either with a pressure fuelling coupling or a gravity fuelling nozzle enables supply to the helicopter.

The hose is flushed by coupling the nozzle to the flush outlet located in the pit on the flight deck.

Defueling

Complete or partial defueling from the helicopter tanks or the hose after refueling is performed by means of one of the TPD plant electric pumps once the circuit has been configured.

TPD plant specifications:

- Quantity of pumps 2
- Nominal flowrate TBD m³/h
- Level content Water < 10 ppm
- Solids < 2 mg/l

Control, Monitoring and Automation

The aviation fuel system is locally operated and controlled via the TPD plant control panel.

Emergency shut-down may be initiated from the flight deck or the bridge.

The general fault alarm is relayed to the PMS.

The system is manually controlled from the plant.

543 - Lubrication Oil System**General Description**

The lubricants system enables:

- Gravity-fed loading of clean lubricant in dock,
- Storage of clean and used lubricant,
- Distribution of lubricant,
- Dock-side discharge of clean and used lubricant.

The valves are manually operated.

The lubricant circuit comprises:

- One (1) clean lubricant storage tank,
- One (1) used lubricant storage tank,
- One (1) transfer pump enabling the distribution of clean lubricant via a flexible hose fitted with a delivery nozzle,
- One (1) suction pump enabling the used lubricant to be forwarded to the used lubricant tank.

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Breathing Air

Diving cylinders and self-contained breathing apparatus are filled from an HBA 04 high-pressure compressor.

Compressor specifications:

- Type COMPAIR HBA 04 (or equivalent)
- Nominal flowrate at 300 bar About 10 Nm³/h
- Maximum used pressure 200/300 bar

555 - Fire Extinguishing systemsGeneral Description**Gas Extinguishing System**

The engine compartment and emergency Diesel generator area are protected by a NOVEC extinction system, or equivalent. The system is manually controlled from the bridge, to which the general fault alarm is also relayed.

Fire protection in the galley consists of:

- An R102 chemical powder system, or equivalent, for the fryer and the grill,

A CO2 system for the extraction hood AFFF system:

- Jet fuel pump room and paint store are protected by an Agent Foam-Forming Film (AFFF) fixed firefighting system. AFFF is produced in tanks which can supply a high-capacity fire nozzle. The spray rate of AFFF is approx. 5 l/mn/m², foam concentrate 3%, autonomy 5 min.

Foam system

The flight deck is protected by a foam application system. The foam is produced by an emulsifying liquid storage module via the seawater fire main and a specific nozzle.

Portable Fire Fighting Equipment

A number of portable fire-fighting appliances are provided in accordance with the requirements of SOLAS and the classification society.

Control, Monitoring

The gas-based extinguishing system is locally controlled.

The emulsified water sprinkler system is manually and locally controlled.

556 - Hydraulic Fluid SystemGeneral Description

2 hydraulic units supply the steering system and the stern door/stern embarkation system/shelter door.

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"Steering gear" hydraulic unit specifications:

- Maker BOPP
- Power Approx. 2x 6.6 kW
- Maximum used pressure 150 bar

"Rigid-hull inflatable boat deployment/shelter door" hydraulic unit specifications:

- Maker BOPP
- Power 2x 34 kW
- Maximum used pressure 250 bar

560 - Ship Control Systems**561 - Steering System**General Description

The steering gear comprises the following elements:

- Two (2) spade rudders
- Two (2) trunk spaces welded to the hull, in which the rudders move (+/- 35 degrees),
- Two (2) hydraulic actuators connected by a linking bar,
- A hydraulic power plant fitted with two pumps and a manual back-up pump (in accordance with applicable regulations),
- A 250 litre oil tank fitted with a manual pump,
- An electric start-up and monitoring panel,
- An operation/control board integrated into the navigation console located on the bridge,
- A plan position indicator mounted on the wheelhouse ceiling, and a rudder angle repeater in the steering gear area.

Control, Monitoring

Under standard conditions, the steering gear is operated from the bridge, once the units have been started up from the bridge, or it is operated locally, after all necessary checks have been performed and the local control panels have been powered up.

The three standard operating modes are:

- Tiller mode,
- Follow-up mode,
- Automatic pilot mode.



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565 - Stabilization system

Active stabilization system

General Description

The ship is fitted with an active stabilization system.

- The system is composed of:
- A pair of non-retractable fins,
- A pair of stocks and their bearings;
- A pair of hydraulic actuators;
- An hydraulic power plan, including emergency plant;
- Starting and monitoring electrical panels; and
- One roll sensor.

568 – Bow thruster

General Description

The ship is equipped with a transverse thruster in the bow section, which facilitates berthing operations, especially in counter wind beam conditions (20 knots as a maximum).

The bow thruster is powered by a vertically-installed 200 kW electric motor.

It should be noted that the transverse thruster efficiency is reduced at ship speeds greater than 4 knots.

Bow thruster specifications:

- Diameter of the bow thruster propeller: approx 0.75 m;
- Propeller type: fixed blades
- Power approx. 200 kW.

Control, Monitoring

The bow thruster is remotely controlled from a console located on the bridge.

570 – Replenishment At Sea

The ship is fitted with one RAS station on deck 01 allowing fuel transfer on portside.

The maximum flow rate is 100 m³/h.

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580 - Mechanical Handling Systems

581 - Anchor Handling and Stowage Systems

Applicable Documents

ISO 4568

General Description

The operations systems and associated equipment are designed in accordance with the Classification Society regulations. They are suitable for a maximum mooring depth of 82.5 m.

Windlass and capstan

An electro-hydraulic windlass-capstan with horizontal shaft is installed in the foredeck, in line with the ship's axis.

This equipment complies with the ISO 4568 standard and the Bureau Veritas regulations.

Windlass-capstan specifications:

Chain 36 mm U3

- Voltage: 380 V, 3-phase
- Frequency: 60 Hz
- FNom 61.5 kN
- FMax 92.3 kN
- FBrake (45%) 472.5 kN
- Vnom 9m/min

The windlass-capstan warping ends comply with the ISO 6482 standard, concerning warping end profiles.

Anchors

The ship is fitted with two Pool®-TW High Holding Power (HHP) anchors, located either side of the axis at the forward end of the foredeck.

Each anchor consists of machine-welded high-strength steel sections, and weighs approximately 1,600 kg.

Mooring line

In accordance with the Bureau Veritas regulations, the total length of chain cable is 440 m, divided equally into two mooring lines.

Each mooring line (two) comprises:

- One (1) anchor,
- Eight (8) 27.5 m length stud-links chain cable, diameter 36 mm Q3,,
- Nine (9) joining shackles (lugless type),
- A chain-end at the anchor-end comprising:
 - A swivel hook mounted directly on the anchor,
 - An end link.

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- A chain-end at the chain locker-end comprising:
 - A clench link,
 - An end link,
 - An enlarge link
- A clench hook.

A tar paint is applied to all anchors, chains and shackles.

The chains may be rinsed using the fire hose located on the foredeck, which is connected to the ship's sea water system.

Chain stopper

A chain stopper of a pawl type is located between the exit of the windlass cable lifter and the hawse pipe.

Each chain stopper can withstand a tensile load equal to 80% of the chain cable's breaking load, and complies with the requirements of the ship's classification regulations.

582 - Mooring and Towing System

Applicable Documents

ISO 3913 standard

DIN 81915 standard

General Description

The mooring and towing installations as well as all relevant equipment are designed in accordance with the standards set by the Classification Society.

The ship is fitted with the following hawsers which comply with the BV regulations:

- 4 polypropylene mooring hawsers of approximate diameter 44 mm, and length 160 meters, wound on a reel,
- 1 spare hawser with the same features as the mooring hawsers.

Provided are:

- On the foredeck:
 - 1 towing chock, (Panama type),
 - 4 Panama chocks,
 - 5 double bitts, of which 2 with integrated roller,
 - 1 pedestal roller,
 - 2 hawser reels (external).
- On the afterdeck:
 - 1 towing chock, (Panama type),
 - 4 Panama chocks,
 - 5 double bitts,
 - 3 pedestal rollers,
 - 2 hawser reels (1 exterior, 1 interior).

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On the foredeck the anchor capstan is used for all mooring operations.

A hydraulic capstan is mounted at the front of the afterdeck (halfway along the width of the ship), which complies with the ISO 3730 standard and facilitates the mooring procedure.

Towing

Foredecks and quarterdecks are especially designed for emergency towing operations, but only between ships of the same tonnage (both tow and tug) in sea and wind conditions corresponding to sea state 4.

To this end, the ship is equipped with:

- A towing padeye on the foredeck so it can be towed
- A towing padeye on the afterdeck so it can tow another ship.

Other necessary parts to enable towing operations are:

- Standard towing equipment for the tow:
 - 1 HR shackle for the towing padeye,
 - 1 chain pendant,
 - 1 HR towing shackle,
 - 1 polyamide towing hawser.
- Standard towing equipment for the tug:
 - 1 dynamometric shackle,
 - 1 "pelican" hook,
 - 1 chain pendant,
 - 1 HR towing shackle.

These parts are provided by the Contractor as on-board mobile equipment.

The ship is equipped with 2 harbour towing hawsers, 60 m in length (polyamide with 8 plaited strands approx. 45 mm in diameter).

The features of this equipment comply with the standards of the shipyard and the classification rules related to the ship.

583 - Boats, Boat Handling and Stowage Systems

General Description

RHIB systems

The launching/recovery system integrated in the afterdeck of the ship is especially designed to quickly and securely launch the operational crafts, which consists of two RHIBs with a length of 9 m in the following conditions:

- Launch time..... < 5 mn
- Ship speed (forward)..... max. 10 knots
- Sea state < SS4

The RHIBs are stored at stern ship on oblique ramps and fitted symmetrically on each side of the ship centerline.

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The installation consists of two (2) launching devices that are symmetrical with the central line of the ship and which each consist of:

- One mobile girder, mounted onto two roller tracks integrated in the ship's structure, which supports:
 - One geared motor that ensures longitudinal movement,
 - One hydraulic hauling winch,
 - One tubular structure to push the RHIB forward during the launch phase.
- Two guide rails to ensure the RHIB and ship stay mechanically in contact. These guide rails are adapted to the shape of the RHIB and are bolted into the structural ramp,
- One hauling rope (synthetic rope)
- One hydraulic double stern door to protect RHIBs while onboard.

The hydraulic power needed by the launching system (as well as the capstan and shelter door) comes from a hydraulic power plant located in the Steering gear room. The features of this power plant can be found in § 556 – Hydraulic Fluid System.

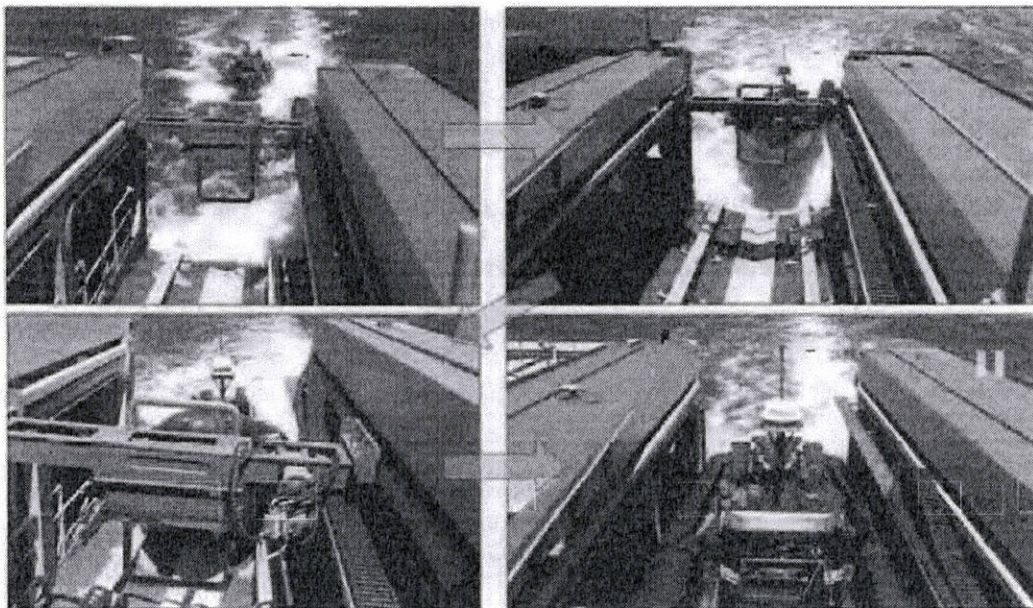


Figure 20. RHIB Recovery Operation on Board L'Adroit

RHIBs Characteristics

The main characteristics of the two identical supplied RHIBs are given in Annex 1 of this Technical Description.

Safety Devices and Equipment

The features of the rescue craft and safety equipment comply with the instructions for devices of the SOLAS regulations for cargo ships.

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The ship is fitted with:

- One (1) rescue boat with a 25 HP motor and its davit placed in E0121,
- Six (6) life rafts of 20 places of type DK20, which are stored in cradles on deck 01 and launched manually,
- Eighty-seven (87) lifejackets with lights,
- Eight (8) life buoys,
- Fifty-nine (59) immersion suits,
- One set of emergency radio equipment and signal flares,
- Six (6) EEBDs for evacuation of the ship.

All equipment listed above, including their features and amount, comply with the SOLAS requirements.

Rescue boat specifications:

- Length overall..... 4.50 m
- Beam overall 1.94 m
- Boat weight (including SOLAS equipment and engine) About 350 kg
- Max. Capacity 6 persons
- Engine..... 25 HP (Solas compliant)

The features of the davit comply with the SOLAS standard.

588 - Aircraft Handling, Servicing and Stowage

The ship is designed to host a 5 tons class helicopter (Dauphin or Panther).

General Description

The ship design corresponds to a Class 2A, Level 1 hoisting ship in accordance with NATO classification:

- Class 2A: The host ship has limited service facilities that are suitable for the temporary embarkation (a maximum of 2 to 3 days) of 5 ton class helicopters.
- Level 1: Ship's facilities are capable of supporting both day and night helicopter operations under both IMC and VMC for those helicopters so designated and under acceptable platform movements.

The installations comprise:

- A landing and take-off area,
- A fixed helicopter shelter with hydraulic door, compatible with a 5-ton class helicopter (Dauphin or AS565 Panther),
- A jet fuel refuelling system,
- Ancillary equipment (see helicopter specification).
- A complete fully Night Vision Goggles (NVG) compatible Visual Landing Aids System;
- The electrical facilities to start a Dauphin or an AS565 Panther helicopter and its auxiliary equipment on the spot.
- One landing grid type 27-07 on the deck
- One helicopter handling system

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Flight Deck

The flight deck measures approximately 13 m by 21 m.

Provided are:

- Steel collapsible panels,
- Fire-fighting equipment in case of a crash during landing or take-off (in accordance with BV regulations),
- Lashing points distributed across the platform so helicopters can be tied down on the spot and in the shelter,
- One landing grid type 27-07 to prevent water and possibly even jet fuel from dripping on the hull, a hatch coaming of approx. 90 mm is installed on the periphery of the flight deck. 10 scuppers have also been provided (6 on deck and 4 at the right hand side of the door of the helicopter shelter).

Features of the main equipment:

- Collapsible panels:
 - Quantity 20
 - Material Steel
 - Height (when raised) 1,100 m
- Lashing points:
 - Type FA-67G
 - Safe working load (SWL) 5 t
 - Diameter approx. 153 mm
- Landing grid (OPTION)
 - Manufacturer/Type NAVAL GROUP/Model 27-07
 - Diameter 2,750 mm
 - Maximum compression load 210 kN
 - Nominal traction force 65 kN
 - Compatibility:
 - 5 tons class Helicopters landing & harpooning
 - 10 tons class Helicopters landing only

Helicopter Landing Aids

The ship is fitted with the following landing aids in order to increase security during flight operations:

- Flight deck markings,
- A set of command lights (2) on the flight deck and homing lights (2) on the masts,
- A set of lights to ensure flight deck and topside lighting:
 - Flight deck lights:
 - Deck entrance lights (green) 4
 - Deck edge lights (amber) 8

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- | | |
|---|---|
| - Corner lights of the helicopter shelter..... | 4 |
| - Obstruction lights/hangar washdown floodlights | 3 |
| - Flight deck floodlights | 2 |
| - Maintenance floodlights | 2 |
| - Electrical cabinet (technical room under the bridge)..... | 1 |
| - Control panel for the landing aids (on the bridge)..... | 3 |
- One Glide Slope Indicator (GSI);
 - One Horizon Reference Bar (HRB)

AVIA Console

All flight operations are directed by the Aviation console located on the rear of the bridge. This position offers a direct view of the flight deck and the helicopter during the approach, landing and take-off phases or during supply operations.

The Aviation console comprises the following means and equipment:

- Controls for the command lights,
- On-board communication systems and communication with the helicopter,
- Information from the navigation system,
- Relative wind-force and direction,
- Rolling and pitching.
- Controls of the crash alarm,
- Controls for the flight deck lights and obstruction lights
- Control of GSI and HRB

Helicopter Shelter and Shelter Door

A fixed shelter is installed on the central line of the ship. It is 14 m long and 6 m wide with an overall height of 3.85 m. It is closed by means of a hydraulic door. It can accommodate one 5 tons class helicopter (type AS565 Panther or Dauphin).

The following equipment items are provided in the shelter:

- Lashing points to secure the helicopter,
- Fire-fighting equipment,
- A ventilation system,
- Plug cabinets for the 28 V and 400 Hz power supply of the helicopter.

A support system of tie-down ropes has been installed on the rear port side of the shelter. The tie-down ropes are BFE.

Two LP air plugs can be found on the port and starboard side of the shelter. Landing gear shock absorbers of the helicopter can be pumped up by means of nitrogen bottles.

A fresh water supply is connected to the shelter with a 50 m hose to wash the helicopter on the spot and the landing grid.

There is no aviation workshop on board. There is, however, an "Avia Tech Room" storage room of approximately 12 m² to store small spare parts, oil, etc.

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Features of the main equipment:**Shelter Door**

The helicopter shelter door has an opening of 4,300x 4,400 mm (length x height) and is hydraulically operated from a cabinet inside the shelter:

- Brand/Type BOPP/Projection
- Light approx. 4,300 mm (width) x 4,400 mm (height)

400 Hz Converter

400 Hz converter and plug cabinet with flexible 25 m long cable, equipped with an NF L 54 555 aircraft connector:

- Output rated power 30 kVA
- Rated output voltage Phase/Neutral = 115 VAC
- Between phases = 200 VAC
- Nominal frequency 400 Hz

28 V 400 A Transformer

28 V 400 A transformer and plug cabinet with flexible 25 m long cable, equipped with a NFL 54 555 aircraft connector:

- Nominal output voltage 28 VDC
- Nominal output current permanently 400 A
- Output voltage at 1200 A Between 24 and 29 VDC
- Maximum output current 1200 A during 2 sec
- 750 A during 12 sec
- 500 A during 16 sec
- 400 A during 40 sec

Portable Battery Charger

- Input voltage 230 VAC, 1 ph, 50 Hz to 60 Hz
- "Charge" function Intensity: 1.5 A to 60 A
- Voltage: 1.2 V to 32 V
- Duration: 1 min to 9999H
- "Discharge" function Intensity: 0.1 A to 50 A
- Voltage: 0.8 V to 30 V
- Duration: 1 min to 9999H

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Glide Slope Indicator

- Maker.....Linksrechts (or equivalent)
- Rater power.....24 V DC
- Ingress protection.....IP 67 acc. GL Standard 2004
- Operating temperature.....-25°C to +45°C
- NVG compatibility.....according to MIL-STD-3009
- Light source.....LED
- Light colors.....Green/Red/Amber

Horizon Reference Bar

- Maker.....Linksrechts (or equivalent)
- Rater power.....24 V DC
- Ingress protection.....IP 67 acc. GL Standard 2004
- Operating temperature.....-25°C to +45°C
- NVG compatibility.....acc. To MIL-STD-3009
- Light source.....LED modules
- Light colors.....Amber/Green

Helicopter Handling System

A helicopter handling system is proposed. The system has to be compatible of the 5-ton helicopter (Dauphin or Panther).

589 - Miscellaneous Mechanical Handling SystemsGeneral Description**Lateral Door Handling System**

When the shell door is open, a manual monorail of SWL 200 kg can be used to recover/transship cargo.

Chain Hoists

Two manual chain hoists running on rails on the ceiling of the engine room above the main engine are supplied.

Containers Securing

Lashing points (8 points) are welded in the front part of the flight deck in order to attach two 20 ft ISO containers (max. weight: 10 tons each).

Lashing equipment are compatible with those onboard a container ship, and allow quick, easy and safe container operations.

These containers are set aboard with harbor handling equipment (crane), when the ship is alongside.

The storage of containers on the flight deck is exclusive from any aviation operation.

Deck Crane

A deck crane of 2.3T @ 10 m capacity (approx.) will be fitted on board.

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590 - Special Purpose Systems

593 – Oily Water System

General Description

The treatment installation for oily water can be used for the following functions:

- To collect and treat water charged with hydrocarbons,
- Unload water charged with hydrocarbons and sludge on shore.

The oily water is collected by means of a special pump in the engine room or manually in other rooms.

The oily water is treated by means of a homologous separation module in accordance with the OMI-MARPOL MEPC 107 (49) regulations. This module is located in the engine room.

Features of the hydro-carbonated water separator:

- Number 1
- Type FACET CPS 3.2 + EBM 14X1
- Flow rate 0.7 m³/h
- Content < 15 ppm

The ship contains:

- A oily water tank,
- A sludge tank.

The size of the installation complies with the applicable norms of the MARPOL convention and with the BV regulations (CLEANSHIP).

Control, Monitoring

The equipment is operated locally.

The emergency stop can also be operated locally.

The default alarms are monitored from the PMS.

The height levels of the tanks are monitored from the PMS.

The water separator tank works automatically once the operator has switched it on manually.

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600 - Outfit and Furnishings

600 - General

Applicable Documents

ANEP 24

General Description

The living quarters are distributed in accordance with the General Arrangement drawing.

Inside, the living quarters feature a modern Western European style. The color combinations were chosen together with the buyer's representative from a color palette provided by the Seller.

The floor surface of the rooms complies with the instructions of the ANEP 24.

All materials used for the equipment comply with the norms of the shipyard.

Laptops can be connected, powered and stored inside the living quarters.

As a general rule, all signs, doors and manholes comply with the manufacturing standards of the Seller or the shipyard.

602 - Hull Designating and Marking

Applicable Documents

IMO Resolution 760 (18)

General Description

The language used on signs, markings and signposts is generally specified by the Buyer. For standard commercial equipment, however, English is the authorized language.

Hull Markings

Hull markings shall be welded and provided for the marking of bulkheads, hull appendages, outboard openings, waterline and ship number.

Ship's name and waterline marking will be according owner standards.

Signposts

Signposts could include location signs, pictures or signs used to indicate the rules of conduct, maintenance instructions, lubrication charts, diagrams, danger signs, warning signs and safety warnings or instructions, depending on the circumstances.

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Signposts are installed:

- In locations where this is deemed necessary by the manufacturer of the ship,
- In any location where this is necessary to reduce the risk of injury to the staff or damage to the machines, equipment or systems,
- If specific safety precautions need to be taken,
- In any location where this is necessary to guarantee the storage rooms and storage equipment are used correctly.

The signposts are installed in such a manner that they are clearly visible.

Markings pinpointing evacuation routes or emergency equipment comply with the OMI/SOLAS regulations (OMI resolution 760 (18)).

603 - Draught Mark

General Description

Draught marks are made at the front, in the middle and at the rear of the ship, on the port and starboard side, and are sufficiently high up to cover the draught above the bottom of the keel under any possible circumstances and with any possible trim of a ship that is fully intact.

The draught ladder at the front is as close to the bow as possible and the ladder at the rear as close to the stern as possible. The ladder in the middle of the ship is located in between the front and rear ladders.

The draught marks are indicated on a perpendicular map on the map that runs past the keel line.

The draught ladders are marked with Arabic numerals that are 100 mm in length. The lower part of the numerals gives the draught in decimeters.

The numbers on the draught ladders are marked by welding points and painted white.

604 - Locks, Keys and Tags

General Description

Locks and keys

All locks require a different key.

All locks of accommodations spaces use a pass system.

The cabin/airlock doors, public spaces, offices and storage rooms all have cylinder locks.

The doors of hygiene rooms have latches rather than cylinder locks.

Locks to small arm stores and associated ammunitions, the retention room and rooms containing confidential documents are of monitored type.

Three (3) keys are provided per lock as well as a total of three skeleton keys for each zone (the ship may be divided into zones at the discretion of the Buyer in accordance with the regulatory security documents).

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610 - Ship Fittings**612 - Rails, Stanchions and Lifelines**

Handrails and railings are installed, if needed, to prevent falls.

In general, all outdoor deck sides are protected by bulwarks, handrails, railings or guardrails (in steel or a glass-resin alloy, depending on the zones).

613 - Rigging and Canvas**Protection**

Protective measures (trapaulin) are provided for the following exposed equipment:

- Compass repeaters and searchlights on the bridge wings,
- Anchor capstan, capstan.

The ship's bell

A brass bell with the name of the ship is provided.

Mast equipment

The ship is equipped with the following mast equipment, designed in accordance with the Seller's standards:

A set of flag and markings halyards,

A set of flagstaffs (2),

A set of ropes and accessories for the dress ship

All flags (for example, alphanumeric code, various markings, national flag, ensign and dress ship) are supplied by the Buyer (BFE).

620 – Hull Compartmentation**623 - Non Structural Bulkheads and Ceilings**General Description**Accommodation Bulkheads**

Accommodation bulkheads comply with the classification regulations.

The cabins, wardroom, the dining hall, the sanitary spaces, the bridge, the mission preparation room and the accommodation passageways are kitted out with decorative sandwich panels.

The hull or structural bulkheads of the above-mentioned rooms are lined with panels of a C certified type material or equivalent of thickness 25/30 mm.

In the other rooms, steel bulkheads or sandwich panels are visible.

Elastic decoupling of the bulkheads is not provided.

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Accommodation bulkheads of the sick bay are not compatible with X-ray radiography.

Trap doors give access to elements located behind the accommodation bulkheads.

The colors of the accommodation bulkheads comply with the Seller's standards.

Ceilings

The cabins, the dining hall, the wardroom, the meeting and changing room of the Special Forces, the mission preparation room, the accommodation passageways, the sanitariums and the bridge are fitted with ceilings.

All ceilings are constructed from steel plates, except for that of the bridge, which is made from aluminum.

The galley and scullery are equipped with stainless steel panels.

Grating

The bridge of the machine room is kitted out with grating in galvanized steel screwed onto a fixed steel structure using flat-headed bolts.

The grating can be pulled back to access the equipment. Manholes made from galvanized steel provide access to the valves.

623 - Ladders

General Description

Vertical and leaning ladders

All vertical and sloped ladders comply with the ISO standards and the classification regulations related to the ship.

The sloped ladders have a clear width of 700 mm in accordance with Chapter II-2 Regulation 13 – 3.2.1.2 of the SOLAS convention.

Brow

The ship has one 7 m long lightweight brow (in 2 parts) made of aluminum alloy, which complies with the ISO 7061 standard.

Gangway

The ship is not equipped with a gangway.

Pilot ladder

The ship is equipped with a pilot ladder, which complies with the IMO regulations.

624 - Non Structural Closures

General Description

Non-structural closures are adapted to maritime use. In general, the handles, knobs, etc. of all interior doors are made from chrome-plated brass or an anodized aluminum alloy. The door frames are made from steel. All doors are of the same color.

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Internal doors

The type of fire sealant on the doors (A, B or C) was chosen in accordance with the standards relating to the classification regulations. Ventilation grids may be placed on the doors in accordance with the BV requirements.

All doors that have to comply with the 1223 directive are considered A or B type doors (fire doors).

Door locking devices

All type A or B doors have been equipped with door locking devices in accordance with the BV requirements related to the ship.

Door blocking systems

All type C doors have been equipped with blocking systems in accordance with the BV requirements.

625 - Portholes, fixed Portholes and WindowsGeneral Description**Windscreen frames**

Windscreen frames are installed all around the bridge. The distribution and size of the windscreen frames comply with current regulations (visibility of the helmsman) and ensure maximum visibility of the entire horizon.

All frames are welded and are an approximate height of 1.1 m by a width of approximately 1 m. Clear visibility can be guaranteed for approximately 1 m (height) by 0.9 m (width). Two high windscreen frames (2 m) are installed at the rear of the bridge to improve the field of vision (flight and RHIBs launching operations)

The glass panel is made of laminated tempered glass, is 22 mm thick and complies with the applicable BV regulation.

Seven (7) windscreen frames are equipped with regulatory windscreen wipers and de-icing systems, which are arranged as follows:

- Three (3) windscreen wipers and a de-icing system at the front of the bridge,
- Two (2) lateral windscreen wipers and de-icing systems (1 at port and 1 at starboard),
- Two (2) windscreen wipers and de-icing systems at the rear starboard side of the bridge (visible from the FDO post).

Porthole

The ship is equipped with portholes that are 300 mm in diameter and located as follows:

- Four (4) on port side (cabin),
- Six (6) on starboard side (wardroom (2), dining hall (3) and meeting room (1)).



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630 - Preservatives and Coverings

631 - Painting

General Description

The paint system used is of a suitable quality for the protection of maritime structures and is available on the global market.

All anti-fouling paint used complies with the resolution of the OMI's AFS (Anti-Fouling System) convention.

633 - Cathodic Protection

General Description

Zinc anodes are installed to ensure passive cathodic protection. These anodes are especially designed to provide protection for 24 months after the ship has been delivered.

The type and number of anodes to be used will be decided together with the anode supplier.

634 - Deck coating

Applicable Documents

The various floor surfaces comply with the classification regulations (OMI classification).

General Description

The ship comprises the following floor surfaces:

- In the cabins, wardroom, dining hall, mission preparation room, accommodation passageways, meeting room and on the bridge: vinyl flooring with skirting boards,
- In the galley, scullery, laundry room, divers room and hygiene rooms: resin,
- On the staircases and in the technical and storage rooms: antiskid steps;
- On the bridge: false floor boards with raised vinyl flooring,
- In the sick bay: anti-static vinyl flooring,
- In the Engine control room: non-magnetic flooring.

The floors of all rooms not mentioned above have been painted.

All vinyl or resin floorings have been fully coated with cement.

635 - Hull Insulation

General Description

All thermic and fire-resistant insulation complies with the classification regulations and the practices of the Seller or the shipyard.

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The insulation is made from mineral wool and/or glass wool. The insulation material is fixed to the steel bulkheads or underneath the deck using steel spindles and hooks as per the fire test requirements (the materials can be applied differently, depending on the manufacturer).

Thermal and fire-resistant as well as acoustic insulation can be used.

If fire-resistant insulation is required in accordance with the classification regulations, this takes precedence over thermal insulation.

Thermal insulation

Only approved materials are used and are chosen in accordance with the Seller or shipyard's standards.

The thermal insulation for air-conditioned rooms is fitted on the sides of the hull, above the waterline and also underneath exposed parts of the deck.

Fire-resistant insulation, A-60, A-30 and A-15

The fire-resistant insulation consists of approved materials, which were chosen in accordance with the Seller's standards and comply with the classification regulations. In the living quarters, fire-retardant bulkheads are used as fire-resistant insulation.

Acoustic insulation

Acoustic insulation is fitted where necessary in order to comply with the noise requirements specified in the classification regulations.

Insulation Finish

The insulation boasts a fiberglass finish (not painted) and on average one protection plate if it is visible.

No finishing was added to the interior surfaces, ceilings and panels.

638 - Refrigerated Spaces

General Description

Fresh and frozen goods are stored in refrigerated spaces of a size that complies with the ANEP 24. They were designed in accordance with the classification regulations and climatic conditions.

The refrigerated spaces are located on the main deck in accordance with the General Arrangement.

The refrigerated spaces include a cold room at -20°C and a cold room at +3°C.

Food waste is stored in a cold room at -5°C.

640 - Living Spaces

General Description

The living quarters of the officers and crew are equipped with laminated wooden furniture. All wooden furniture complies with the classification regulations.

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There is no difference between the furniture in the cabins of the crew and in those of the passengers, although the furniture in the Officers' cabins is of a superior quality (accessories, color, etc.).

Each person has a sleeping bunk and a wardrobe/shelf for personal belongings.

The living spaces are designed to reserve a dedicated zone for women. The ship is ready for a mixed-gender crew.

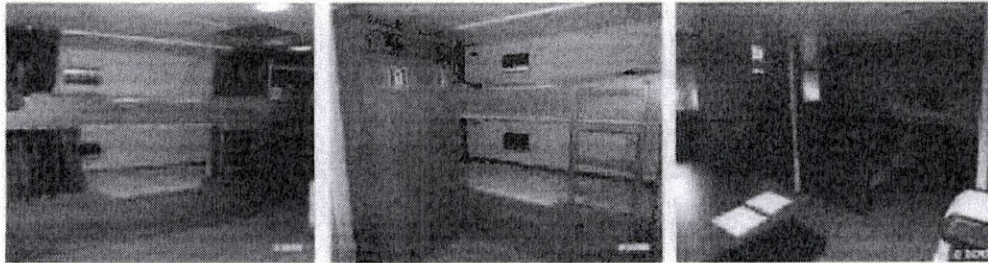


Figure 21. Existing "L'Adroit" Accommodation

641 - Officers' quarters

General Description

Commanding Officer's cabin

The cabin comprises at least:

- 1x 3-function sanitary space;
- 1 single 900 mm wide bunk;
- 1 900x600mm cupboard (lockable);
- 1 drawer under the bunk;
- 2 coat trees;
- 1 bin;
- 1 desk + 1 armchair and 1 chair;
- 1 bookshelf; and
- 1 safe (at least 57 liters).

Commanding Officer's wardroom

The CO wardroom comprises at least:

- Tables and chairs for 4 persons;
- Sofas and coffee table for 4 persons (storage is provided under sofas);
- 1 TV with home cinema set;
- 1 dresser;
- 1 cupboard;
- 1x 70-litre bar refrigerator; and

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VIP's cabin

The cabin comprises at least:

- 1x 3-function sanitary space;
- 1 single 900 mm wide bunk;
- 1 900x600mm cupboard (lockable);
- 1 drawer under the bunk;
- 2 coat trees;
- 1 bin;
- 1 desk + 1 armchair and 1 chair;
- 1 bookshelf;
- 1x 70-litre bar refrigerator;
- 1 TV + home cinema set; and
- 1 safe (at least 57 litres).

One-berth cabins

These cabins comprise at least:

- 1x 3-function sanitary space or washbasin;
- 1 single 900 mm wide bunk;
- 1x 900x600mm cupboard (lockable);
- 1 drawer under the bunk;
- 1 desk + 1 chair with armrest;
- 1 bookshelf;
- 1 coat tree; and
- 1 bin.

Two-berth cabins

These cabins comprise at least:

- 1x 900 double bunk;
- 2 drawers under bunks;
- 2x 450x600mm cupboards (lockable);
- 1 desk + 1 chair;
- 2 coat trees;
- 1 bin; and
- 1 washbasin.

Officers' wardroom

The officer's wardroom comprises at least:

- Tables and chairs for 12 persons;
- Sofas and coffee table for 8 persons (storage is provided under sofas);
- 1 TV with home cinema set;
- 1 dresser;
- 2 low cupboards;
- 1x 70-litre bar refrigerator; and
- 1 drinking water cooler.



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642 - Crew Accommodation (other than Officers)General Description**Four-berth cabins**

These cabins comprise at least:

- 2 double bunks, width 800 mm;
- 4 drawers under bunks;
- 4 cupboards;
- 4 coat trees; and
- 1 bin.

Six-berth cabins

These cabins comprise at least:

- 3 double bunks, width 800 mm;
- 6 drawers under bunks;
- 6 cupboards 0.25 m³ gross;
- 6 coat trees; and
- 1 bin.

Ten-berth cabins

These cabins comprise at least:

- 5 double bunks (one double bulk convertible into sofa), width 800 mm;
- 10 drawers under bunks;
- 10 cupboards 0.25 m³ gross;
- 10 coat trees; and
- 1 bin.

Dining room

The dining room is divided into 2 zones, one for Petty Officers and one for the crew.

Zone dedicated to Petty Officers comprises at least:

- Recreational space:
 - 1 bench seat;
 - 1 TV with home cinema set;
 - 2 lockable base units;
- Diner space:
 - 1x4 persons dining table with chairs;

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Zone dedicated to crew men comprises at least:

- Recreational space:
 - 2 bench seats;
 - 1 TV with home cinema set;
 - 2 lockable base units;
- Diner space:
 - 6 persons dining tables with chairs, for 12 persons;
 - 4 persons dining tables with chairs, for 8 persons;
 - 1x100-litre bar refrigerator; and
 - One drinking water cooler.

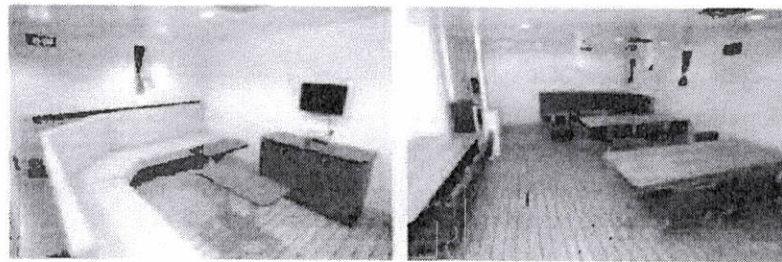


Figure 22. Officer's wardroom and crew dining hall view of OPV L'Adroit

644 - Sanitary Spaces and Fittings

General Description

Depending on their rank, each crew member is assigned sanitary spaces in accordance with the specifications of the general arrangement.

The Commanding Officer cabin, the Executive Officer cabin, the VIP cabin and the sick bay are fitted with private sanitary units.

The Officers' cabins contain a washbasin. A privately reserved shower and toilet are located near the Officers' cabins.

The communal sanitarries are located in accordance with the General Arrangement.

Private sanitary units

The private sanitary units contain:

- 1 toilet,
- 1 washbasin with mixer tap,
- 1 shower with thermostatic mixer tap,
- 1 door that swings to the outside,
- Resin deck coating,
- 1 toilet paper holder, 1 tissue holder and 1 mirror.

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Officer's sanitary

- 1 washbasin with mixer tap (in the officers' cabin),
- 1 shower with thermostatic mixer tap,
- 1 toilet with washbasin.

Communal sanitary spaces

A total of 3 communal sanitariums are provided:

- 1 on 02 Deck close to the bridge;
- 1 on 00 Deck near the RHIB area; and
- 1 on 00 Deck in accommodation area.

They are fitted with:

- Washbasins with mixer tap;
- Showers with thermostatic mixer; and
- Toilets.

Communal toilets

3 communal toilets are installed in accordance with the General Arrangement.

Divers room

A shower is fitted in the divers room.

650 - Service Spaces**651 - Commissary Spaces**General Description**Galley**

The layout of the galley observes the principle of "forward progress". The galley has the following work surfaces:

- Food reception and preparation (peeling, opening tins, etc.),
- Preparation and storage of cold meals,
- Cooking and presentation of the food,
- Service.

The meals for the crew are served on a self-service basis.

The galley is sized for 2 services.

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The galley equipment includes:

- 1 meal distribution rail,
- 1 double sink with sink spray,
- 1 hand washbasin,
- 1 food processor for vegetables,
- 1 potato peeler,
- 1 tin opener,
- 1,600 l refrigerated cabinet,
- 1 cutting board,
- 1 mixer (20 l),
- 1 combi-oven,
- 1 sauté pan,
- 1 cooker with oven,
- 1 grill,
- 1 deep fryer (20 l),
- 1 coffee maker (5 l),
- Stainless steel furniture and shelves,
- 1 cold counter,
- 1 double boiler,
- 1 tray dispenser.

Scullery

The scullery has an opening and counter where dirty dishes and cutlery from the dining rooms can be collected. The users will organize an initial waste collection.

The scullery contains:

- 1 dishwasher,
- 1 waste disposal unit,
- 1 pre-rinse spraying table,
- 1 trolley,
- Stainless steel furniture,
- 1 hand washbasin

Food storage room

The food units contain:

- One cold room (+3°C) and one freezer room (-20°C),
- One dry storeroom.

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Food units have the following features:

Features	Space (m ²)	Height (m)	Total volume of the room (m ³)	Useful storage volume (m ³)
Storeroom	7.7	2.1	16.1	5.2
Cold room +3°C	5.1	2.1	10.7	2
Freezer room -20°C	3.1	2.1	6.5	1.1

Waste storage

The waste storage room contains:

- 1 waste compactor,
- 1 cold room.

652 - Medical Spaces

General Description

The ship is fitted with a sick bay, which contains:

- 1 examination table,
- 1 patient bed,
- 1 washbasin,
- 1 lockable cupboard (for medication),
- 2 lockable cupboards,
- 1 desk + 1 chair,
- 1 bookshelf,
- 1 coat stand,
- 1 bin,
- 1 sanitary unit,
- 1 medical fridge.

Other Medical equipment and medicines are considered as BFE and are to be delivered for each ship by the Armada on due time.

654 – Utility Spaces

General Description

Administrative office (Deck Department)

This room is located near the RHIB area.

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The administrative office comprises:

- 1 office with capacity for 4 desks (three desks of dimensions 700x1600, one desk of dimensions 600x 800);
- 2 cupboards;
- 1 sanitary with toilet and hand washbasin, shared with divers room and accessible from the main passageway.

Divers Room

A divers room is fitted in accordance with the General Arrangement Plan. The room is ventilated with a fresh air supply and an extracting waste air. It is equipped with a seat bench, a shower and a cupboard.

It is surrounded by a storeroom equipped with shelves (approx. 7 m linear).

The toilets and sanitaries are shared with the administrative office and are accessible from the main passageway.

Engineer officer room

An engineer officer room is fitted in accordance with the General Arrangement Plan. The room is ventilated with a fresh air supply and an extracting waste air.

It is fitted with:

- 1 desk (of dimensions 700x1600).
- 1 cupboard.
- Shelves (typical 1.60 m linear).

The toilets and sanitaries are above the Engineer Officer room (on Deck 00).

655 - Laundry

General Description

Laundry contains:

- 2x 7 kg washing machine;
- 2x 7 kg dryer;
- 1 ironing table;
- 1 cupboard; and
- 1 sink.

660 - Working Spaces

General Description

Bridge

The deck of the bridge is covered with a parquet flooring made up of a metallic structure (height: 350 mm), M1 plywood and a vinyl surface.

The ceiling is made from RAL 7015 aluminium.

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Operations area is fitted with a desk.

Three curtains have been placed so the operations area and the aviation area at starboard can be blacked out.

The seats of the Helmsman, EOW and OOW are attached to a rail allowing moving their position by about 1 meter.

All other seats are office seats supported by bungee cords.

Engine control room

The Engine control room contains:

- A console consisting of:
 - The instrumentation and control of the main engines,
 - The instrumentation and control of the diesel generators,
 - Various communication and surveillance equipment (CCTV, breakdown button, interphone terminals),
- Shelves to store technical documents.

Main Switch Board room

The Main Switchboard room is fitted with:

- A Main switchboard console including:
 - Instrumentation and control for the main engines defined in § 200 - Propulsion Plant;
 - Instrumentation and control for the diesel generator sets and alternators defined in § 300 - Electric Plant - General
 - Instrumentation and control for platform equipment (CCTV, breakdown button, interphone terminals...); and
- Shelves for storing technical documentation.

663 - Electronics Control Centre Furnishings

Combat system technical rooms

The combat system technical rooms contain the electronic cabinets and various units of the components of the Combat System and communications systems.

664 - Damage Control Station

General Description

The Damage Control station is located on the bridge (console of the EOW).

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665 - Workshops

General Description

One workshop for mechanical and electrical works is located on Deck 10, section H. The workshop is equipped with:

- 1 workbench,
- 1 vice,
- 1 hand washbasin.

666 – Mission Modules

Anti-pollution module

The anti-pollution module consists in two 10-feet containers:

One 10-feet container with:

- Dispersing agent storage: 4 m³
- A motor pump
- Two arms: 8 m long, 5 sprinklers

One 10-feet container with:

- 200 m-long barrage
- Rolled on a drum
- Hydraulic/diesel engine
- Total weight 3,500 kg

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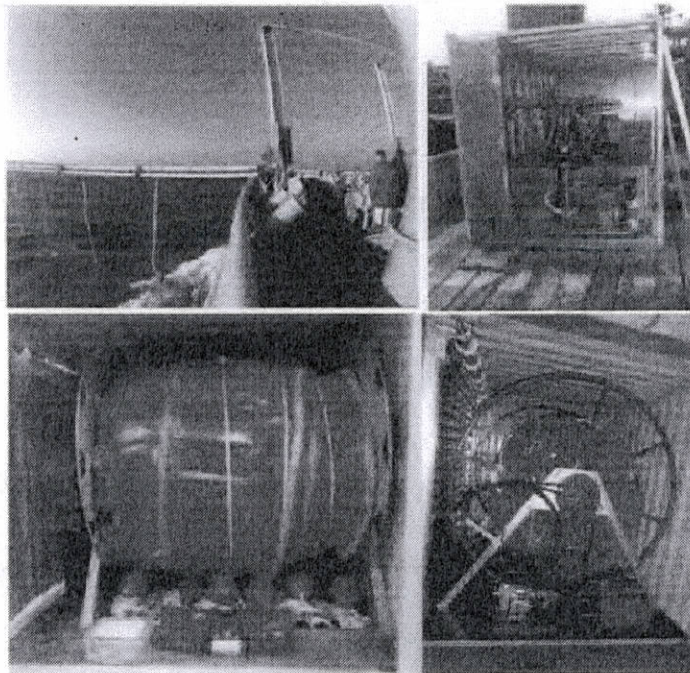


Figure 23. 10-Foot Anti-Pollution Containers

Divers support module

The divers support module consists into two 20-feet containers. The first container features a decompression chamber and a medical gases distribution system, the second one features reception capacity for 4 divers with dedicated showers and locker.

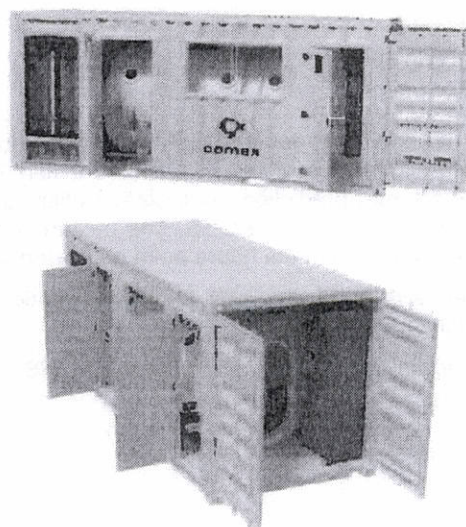


Figure 24. 20-feet decompression chamber container

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700 – Armament

700 - General

710 - Guns and Ammunition

711 - Guns

7111 - Main Gun

General Description

The proposed equipment is the 30 mm gun MARLIN-WS by LEONARDO (or equivalent).

The gun system is a fully stabilized, autonomous gun system.

The gun is remotely controlled only from the bridge in stand-alone mode using a Remote Control Console (RCC).

The gun is composed of the following equipment:

- Gun mount equipped with Coaxial Electro Optical Sensor Suite (CEOSS);
- Power and data interface unit;
- Safety box;
- Maintenance panel;
- Gun Control Unit (Built-in ballistic and prediction computer)
- Remote Control Console (RCC).

The Coaxial Electro Optical Sensor Suite consists of:

- A Laser Range Finder;
- A day TV camera with zoom;
- An IR camera.

The gun is capable of performing day and night operations due to its own CEOSS which has a line of sight coaxial to the line of fire. It provides a fully integrated Fire Control System (FCS) for ballistic and target prediction computation utilizing target range data provided by Laser Range Finder installed within CEOSS. The built-in computer automatically calculates the leading angles required to aim the future point estimated according to data received.

The gun is equipped with a 30 mm ATK MK44 automatic cannon chambered to fire the 30 mm x 173 ammunition family.

The gun system receives target designation from the CMS and transmits status and videos to the CMS.

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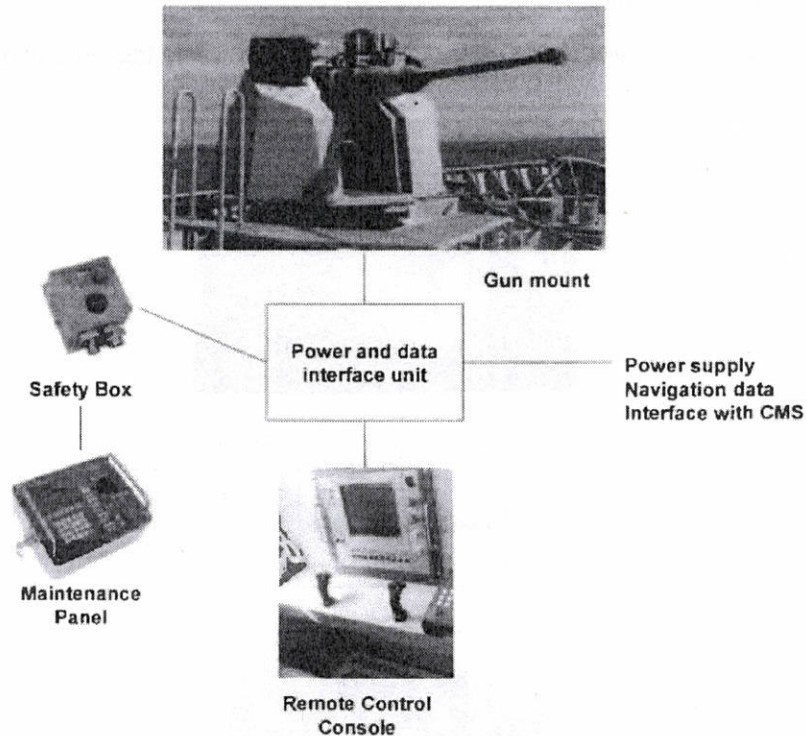
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MARLIN -WS 30 mm gun*Figure 25. MARLIN-WS 30 mm Gun***7112 - Remotely Operated 12.7 mm Guns**General Description

The ship is equipped with two remotely operated 12.7 mm guns.

The two 12.7 mm remotely operated machines guns are installed on port and starboard bridge wings at the rear of the deckhouse.

The gun system is a remotely controlled, stabilized, autonomous gun system.

Each gun is remotely operated only from the bridge in stand-alone mode using a hand controller and video sight.

Each gun is composed of the following equipment:

- Gun mount equipped with on-mount sensors;
- One Multi-Function Display (MFD) and hand controllers;
- One power supply unit.

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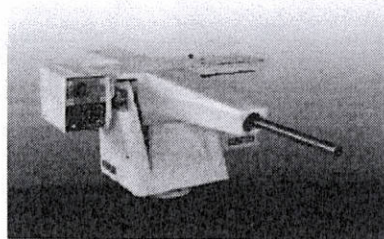
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The on-mount sensors are:

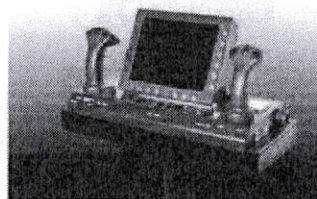
- An un-cooled two field of view thermal imager;
- A daylight system with optical zoom capability;
- A Laser Range finder.

The gun system receives target designation from the CMS and transmits status and videos to the CMS.



Gun mount

Power supply unit



Multi Function Display
and hand controllers

Figure 26. 12.7 mm Gun

713 - Ammunition Storage

Applicable Documents

Seller's standard.

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General Description

Ammunition storage positions are as follows, arranged at locations in compliance with the General Arrangement:

- 30 mm munitions are stored in a dedicated room on 00 deck section B (MCG Store). The storage capacity is approximately 1,440 rounds. They are stored in 48 ammunitions tanks. Each ammunition tank contains 30 ammunitions.
- 12.7 mm munitions are stored in the SCAA store at 00 deck. The stowage capacity is approximately 2,000 rounds in 20 F2 tanks. 2 ready-use locker(s) of total capacity approximately 800 rounds are installed on the bridge wing at deck 03.
- Portable weapons ammunitions are stored in case in the SCAA store on Deck 00.

Storage of aviation munitions is not taken into account.

760 - Small ArmsGeneral Description

Portable weapons are stored in two cabinets: one located in the SCA store on Deck 00 and the other one located on the bridge.

Portable weapons are supplied by the Buyer (BFE).



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A. Characteristics of the RHIBs

Two RHIBs are supplied on each OPV 87. They are compatible with the launching system on board. They have a solid structure and are especially designed for raid, assault and SAR operations.

Zodiac Hurricane 935 H935 MID IO "L'Adroit"	
Overall length	9.39 m
Overall width	3.10 m
Maximum displacement	7,500 kg
Maximum speed	> 45 knots
Range	200 NM @ 40 knots
Crew	2 with shock mitigation seats
Passengers	8 with shock mitigation seats (max. 14 people)
Tank	2x 275 l
Hull (type)/Deck	Aluminium (Mach II hull)
Collars	Durarib (hypalon)
Engine	Inboard diesel 2x 280 HP Steyr Engine MO286 or equivalent
Drive	Mercuriser Bravo 1X 1x propeller (single)
Navigation lights	Led (in accordance with COLREGs)
NAV/COM suite (civil)	Yes
Reinforced towing ring	Yes
Hoisting points	Yes, 6 retractable rings

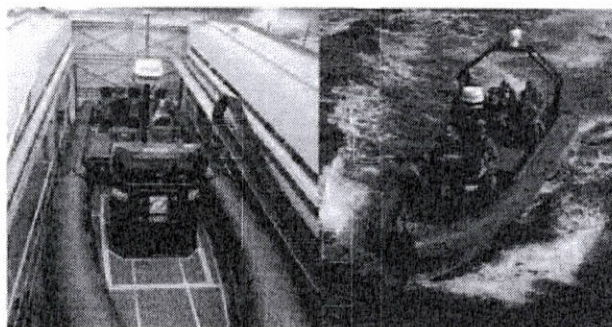


Figure 27. Zodiac ZH935 RHIB

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B. Makers List

The following list gives an indication of the manufacturers of equipment for the OPV 87. Equipment of equivalent performances can also be installed.

Diesel engines	ABC
Gear boxes	REINTJES, SCANA VOLDA
Propeller	SCHOTTEL
Cables	NEXANS
Main Diesel Generators	VOLVO PENTA
Emergency Diesel Generator	VOLVO PENTA
Emergency power Batteries, associated chargers	BARILLEC, ENAG
Diesel generator Silencer exhaust	VOLVO PENTA
Main and secondary switchboards, transformers	BARILLEC (Electric installation subcontractor), SCHNEIDER ELECTRIC
Switchboard, transformers and distribution cabinets	BARILLEC (Electric installation subcontractor), SCHNEIDER ELECTRIC
Combat Management System POLARIS®, Tactical Data link NiDL	NAVAL GROUP
30 mm Main Gun	LEONARDO
12.7 mm Small Calibre Gun	REUTECH, FN Herstal
Navigation, security, Com consoles, chart table...	BARILLEC
VHF ICAO	TELERAD, RHODE & SCHWARZ
VHF IMM & RHIB	KENWOOD via THEMYS
HF	HAGENUK
UHF NiDL®	ROHDE&SCHWARZ or THALES
UHF	TELERAD, RHODE & SCHWARZ
IFF Transponder	THALES, AIRBUS
Goniometer – Direction finder	SAILOR
INMARSAT BGAN system	SAILOR via THEMYS
Air Climatic Units	PAUMIER, TELEMECANIQUE, SOCOMEC, BOCK, ROTOR, AZCUE, BITZER
Firefighting pumps	AZCUE GARBARINO, DESMI
Bilge pump	AZCUE GARBARINO, DESMI

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Ballast pump	AZCUE GARBARINO, DESMI
Osmosis units	SLCE
Freshwater distribution unit	AZCUE GARBARINO, DESMI
Fuel oil separator filter	RELLUMIX RACCOR
Fuel oil pump	AZCUE GARBARINO, DESMI
Lub oil pump	AZCUE GARBARINO, DESMI
Air MP compressor	ERVOR HATLAPA, BAUER, SAUER
Breathable air HP compressor	BCH, ERVOR, BAUER
NOVEC extinction system	TYCO PROTECTION INCENDIE de CORNOUAILLE
Inertial Navigation Unit	SAFRAN or IXBLUE
Echo sounder	ELAC
Steering gear	BOPP
Steering gear hydraulic unit	BOPP
Rudder blade, stock	BOPP Shipyard
Active stabilization	QANTUM
Capstan	BOPP
RHIB launching/recovering system	BOPP
RHIB	ZODIAC
Lifeboat	VIKING
Rescue boat davit	VIKING
JA1 transfer filtration distribution system	RELLUMIX
Oily water separator	FACET RWO
Fuel centrifugal separator	ALFA LAVAL
Waste water treatment system	EVAC
Waste water system: miscellaneous	EVAC
Cold room	PAUMIER
Helicopter handling system	INDAL TECHNOLOGIES, MOTOTOK


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DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

OPV L'Adroit para la Armada Argentina



ANEXO A2 - Descripción Técnica



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Marzo 2018

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1 Sumario

Basados sobre estándares de construcción reconocidos (Bureau VERITAS), los OPV (Offshore Patrol Vessels) son el producto de la ingeniería probada de NAVAL GROUP en integración de sistemas y de plataformas. El OPV L'Adroit se beneficia de la gran experiencia de NAVAL GROUP en construcción de buques y toma en cuenta las experiencias operacionales adquiridas por las Marinas tanto francesa como extranjeras.

Simple de operar, fácil de mantener, con atención especial prestada para reducir los costes del ciclo de vida, el OPV L'Adroit ofrece unas capacidades sin rival de vigilancia marítima, alertas de situación y lanzamiento/recuperación rápido de un helicóptero o de RHIBs (Rigid Hull Inflatable Boats).

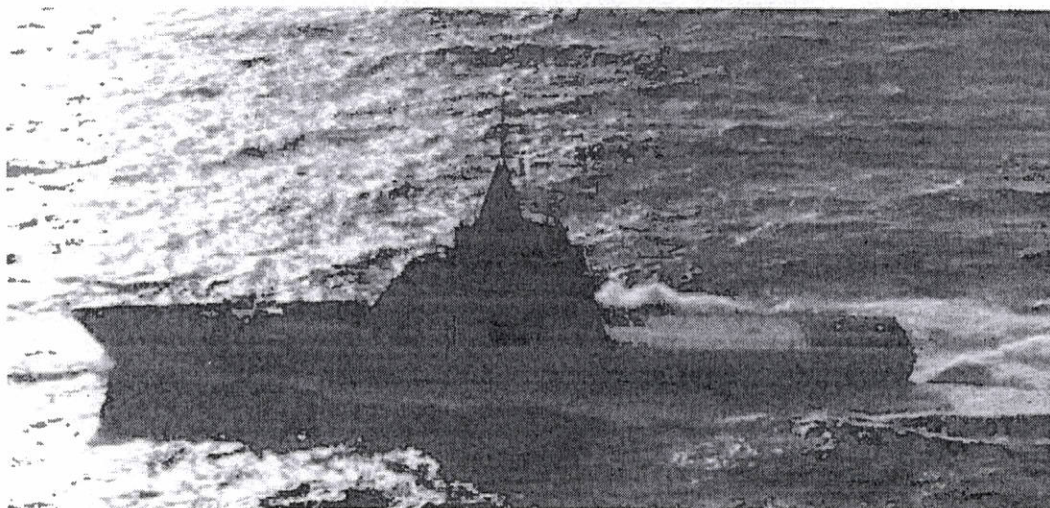


Figura 1. OPV L'Adroit al mar (Figura no contractual)

El buque se caracteriza así por:

- Una gran disponibilidad y resistencia al mar para asegurar una gran tasa de presencia al mar con cualquier condición de tiempo;
- Una capacidad de patrullar a varias velocidades y vigilar grandes zonas, gracias a una combinación comprehensiva de sensores, medios aéreos y sistemas de comunicación;
- Vigilancia de situación;
- Capacidad de actuar de inmediato y replicar, solo o en coordinación con varios medios consistentes con los niveles de amenazas encontradas, incluyendo equipos de Fuerzas Especiales alojados a bordo.

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2 OPV L'Adroit

2.1 Gestión de Configuración

El presente documento describe el OPV L'Adroit, un Patrullero Oceánico Multipropósito, en una configuración posible a su entrega a la Armada Argentina.

2.2 Puntos clave

El diseño del OPV L'Adroit es único para este tipo de buque. Se tomaron en cuenta los puntos clave siguientes para su diseño:

- Un Puente amplio y panorámico permite a la tripulación:
 - Tener una visibilidad completa afuera y alrededor del buque;
 - Beneficiar sin demora de todas las informaciones disponibles (navegación, sistemas de combate y de plataforma, operaciones de los RHIBs y del helicóptero) permitiendo una reacción inmediata del Comandante;
 - Tener una visión directa a la cubierta de vuelo y al sistema de RHIBs permitiendo a la tripulación vigilar directamente las fases de lanzamiento y de recuperación;
- Un sistema innovador de lanzamiento/recuperación de los RHIBs ofreciendo un gran multiplicador de fuerza durante misiones de Policía:
 - Posibilidad de lanzar 2 RHIBs en menos de 5 minutos;
 - Un sistema simple, fiable y robusto;
 - Posibilidad de recuperar un RHIB mientras el buque navega;
- Un diseño con mástil único:
 - Ofreciendo 360° de cobertura a los sensores integrados;
 - Otorgando capacidades óptimas a todos los sensores sin impacto EMI;
 - Protegiendo el radar del severo medio ambiente marino, aumentando de forma significativa la disponibilidad del sistema;
- Un Sistema de Combate dedicado, Polaris® desarrollado por NAVAL GROUP:
 - Capacidades sin rival de vigilancia de situación.

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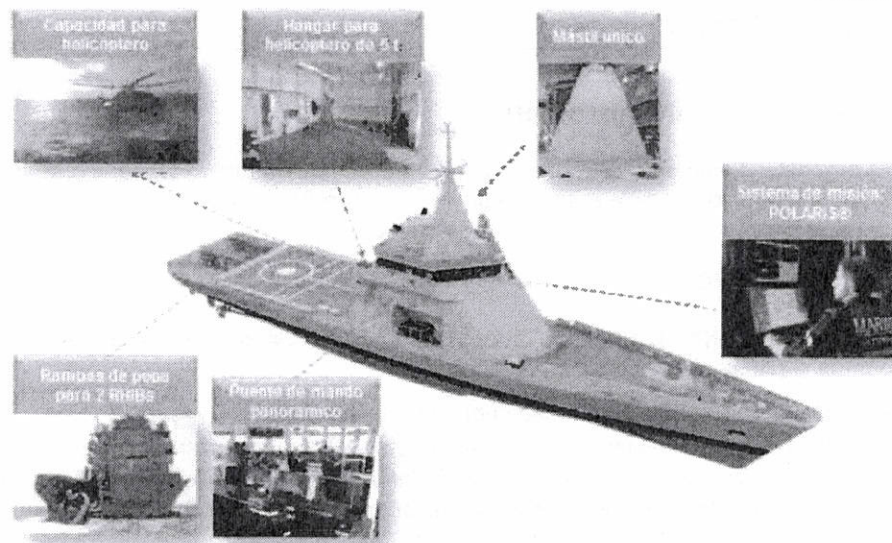


Figura 2. Puntos clave del OPV L'Adroit (Figura no contractual)

2.3 Misiones

El buque está diseñado para desempeñar misiones en zonas económicas exclusivas, aguas territoriales y alta mar, abarcando actividades desde misiones de servicio público hasta operaciones de control marítimo tales como:

- Misiones de servicio público:
 - Alivio de catástrofes;
 - Asistencia humanitaria;
 - Búsqueda y Rescate (SAR); y
 - Ayuda/Soporte a Autoridades civiles.
- Patrulla militar:
 - Seguridad marítima;
 - Contraterrorismo;
 - Antipiratería;
 - Protección de plataformas offshore;
 - Seguridad de navegación al mar: soporte a inspecciones de seguridad de buques, soporte al control de tráfico marítimo; y
 - Control de fronteras: interdicción de drogas, prohibición de tráficos y prevención de la inmigración ilegal
- Operaciones de control al mar:
 - Recopilación de Información;
 - Soporte a operaciones de Paz;
 - Embargos & bloqueos;
 - Aplicación de sanciones económicas; y

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- Vigilancia y control al mar (policía de pescas, etc.) incluyendo operaciones del helicóptero



Figura 3. Misiones del OPV L'Adroit de NAVAL GROUP (Figura no contractual)

2.4 Un buque "Sea Proven"

Todas las misiones y las tecnologías utilizadas y descritas en el presente documento están completamente desarrolladas y "Sea Proven"; éstas han sido utilizadas extensivamente por la Marina francesa quién operó el OPV "L'Adroit" durante seis años.

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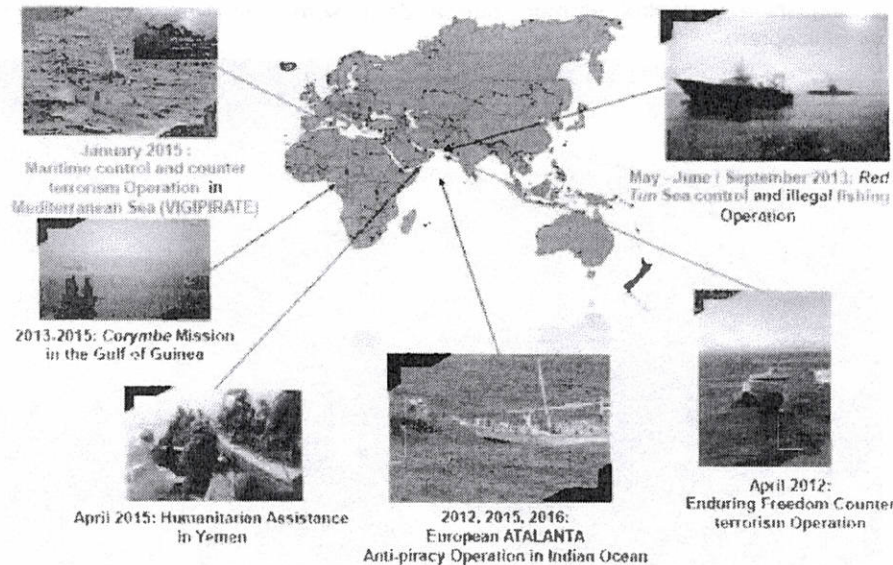


Figura 4 Misiones del OPV L'Adroit durante los últimos cinco años

2.5 Características principales

• Eslora total	87.0 m
• Eslora entre perpendiculares	81.5 m
• Manga máxima	13.6 m
• Manga a la línea de agua de diseño	11.7 m
• Profundidad	7.55 m
• Calado de diseño	3.2 m
• Calado máximo	4 m
• Desplazamiento plena carga a la entrega	Approx. 1,500 t
• Acomodación (personas)	59
• Velocidad	C
• Propulsión	DAD / 2x 2.7 MW
• Autonomía	20 days
• Autonomía a 12 nudos	7,300 NM
• RHIB	1x 9m clase+ 1x 7m clase
• Cubierta de vuelo	10 t Clase
• Hangar	5 t Clase (Panther/Dauphin)

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Figura 5. OPV L'Adroit al mar (Figura no contractual)

El Sistema de Combate incluye la selección de los equipos siguientes, bien adaptados a esta clase de buques:

Sensores de vigilancia:

- Radar de vigilancia.....Scanter 6002 / TERMA
- Radar de navegación.....2x L3-COM SAM-Electronics
- Sistema de detección térmicaVigy Observer / SAGEM

Sistemas de armas:

- Cañones secundarios.....2x 12.7 mm
- Cañón principal.....1x30mm/ LEONARDO

Sistemas C2:

- Combat Management SystemPOLARIS® - 2 consolas multifunción / Naval Group
- Comunicaciones.....HF/UHF/VHF/ THALES
- Comunicaciones satelitales.....INMARSAT
- Unidad de navegación inercialSigma 40/SAGEM

2.6 Tripulación

La tripulación típica del OPV L'Adroit es de 32 personas. Sin embargo, el buque puede acomodar hasta 59 personas. Esta capacidad es muy útil para acomodar personas adicionales durante operaciones específicas: fuerzas especiales, mantenedores, soporte aéreo, adiestramiento al mar (etc...).

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2.7 Estándares

El buque fue diseñado, construido, probado y entregado de acuerdo con las regulaciones BV NR467 "Rules for sea going steel ship", edición 2008

Los estándares que no están regulados por la Sociedad de Clasificación (para acomodación, aviación, almacenamiento de municiones, etc.), lo están de acuerdo con estándares militares completamente dominados por NAVAL GROUP.

2.8 Velocidad y Autonomía

La velocidad continua máxima con los motores Diésel a 100% MCR (Maximum Continuous Rating) es superior a 20 nudos.

La autonomía permite al buque cruzar 7,300 millas a la velocidad de crucera (12 knots) utilizando la capacidad máxima de gasoil a bordo.

La velocidad máxima y la autonomía están determinadas bajo las condiciones de referencia siguientes:

- Casco y hélices limpios,
- Equipos de propulsión ajustados a 100% MCP (Maximum Continuous Power)
- Estado de mar máximo 2,
- Desplazamiento de referencia,
- Fuerza del viento 2 en la escala de Beaufort (max. 6 nudos),
- Temperatura del aire: 25°C max,
- Temperatura del mar: 25°C max,
- Fondo (> 50m)
- Humedad relativa: 30% max.

El desplazamiento de referencia es equivalente al desplazamiento a plena carga a la entrega del buque reducido de un tercio de consumibles.

Las operaciones al mar durante los últimos cinco años han demostrado unas excelentes capacidades de permanencia al mar.

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Figura 6 OPV L'Adroit al mar (Figura no contractual)

2.9 Condiciones ambientales

El buque puede operar dentro del dominio siguiente de condiciones ambientales:

- Temperatura del aire -5°C / +45°C
- Temperatura del mar 0°C / +34°C
- Humedad relativa max 70% at 35°C

2.10 Fiabilidad y Mantenibilidad

El criterio de mantenibilidad ha estado tomado en cuenta desde el principio de la fase de diseño:

- Para facilitar el mantenimiento y la manutención de los equipos;
- Para reducir los periodos de mantenimiento; y
- Para reducir los costes de mantenimiento.

La fiabilidad ha estado mejorada por la selección de sistemas "sea proven" utilizados en buques civiles.

Rutas de desembarque, paneles de cubierta, y zonas de mantenimiento facilitan las operaciones de mantenimiento y la manutención de los equipos.

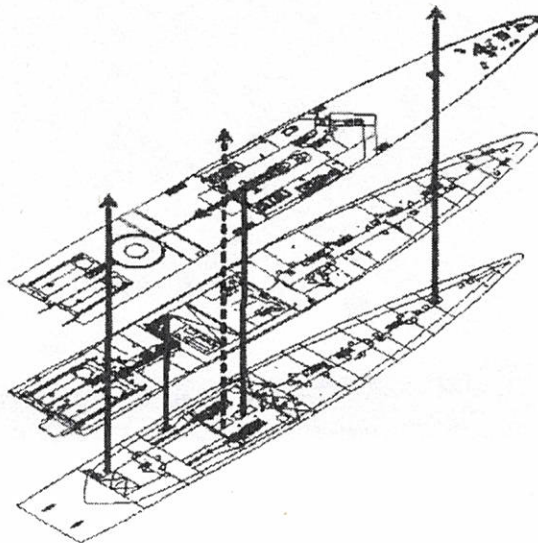


Figura 7. Rutas de desembarque (Figura no contractual)

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3 Características de la Plataforma

3.1 Estructura del casco

El casco está hecho de acero con alto nivel de resistencia DH36. Su construcción cumple con las reglas de la Sociedad de Clasificación y los estándares de construcción naval del Contratista.

3.2 Sistema de Propulsión

El Sistema de propulsión ha sido diseñado con los requisitos operacionales siguientes:

- Velocidad (máxima, de crucera y mínima);
- Consumo de gasoil (con respeto a la autonomía máxima); y
- Facilidad de mantenimiento.

Una arquitectura "Diesel And Diesel" (DAD) ha sido elegida como el mejor compromiso entre estos diferentes requisitos.

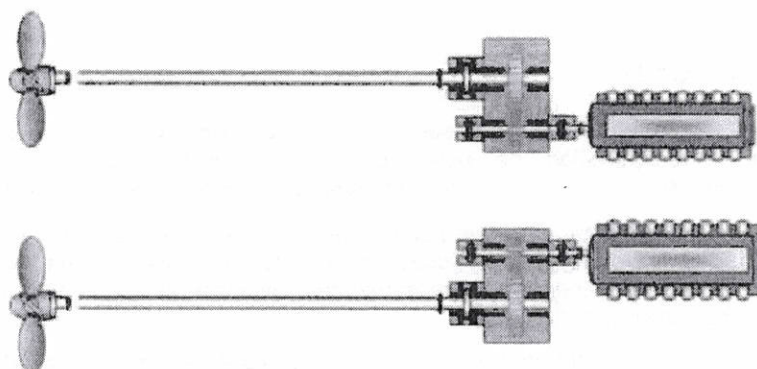


Figura 8. Arquitectura de la propulsión (DAD)

La planta de propulsión se compone de:

- 2 motores Diésel ABC 12VDZC (approx. 2.7 MW);
- 2 cajas de reducción;
- 2 líneas de ejes de propulsión;
- 2 hélices de paso controlable CPP (Controllable Pitch Propellers); y
- Mando y control remotos desde el Puente y desde la sala de máquinas.

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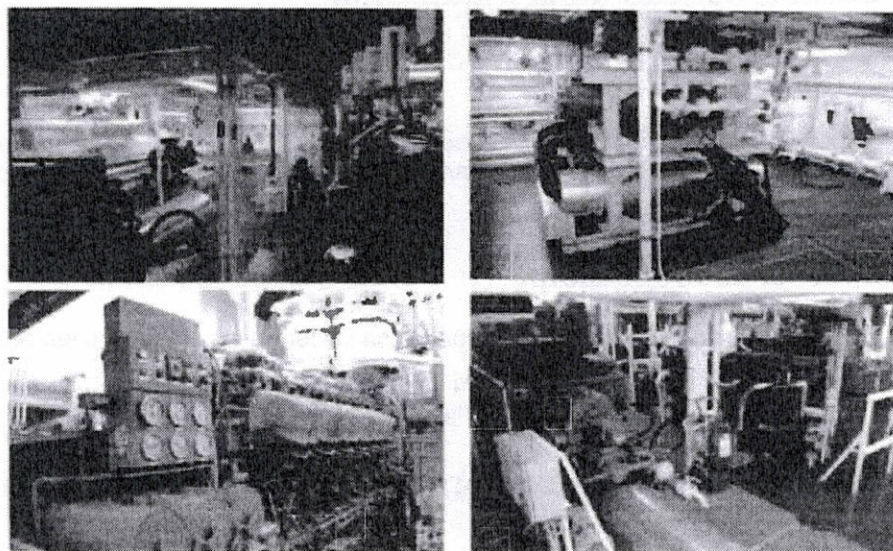


Figura 9. Sala de máquinas de L'Adroit (Figura no contractual)

3.3 Sistema RHIB

El OPV L'Adroit está equipado con dos rampas de popa dedicadas al lanzamiento/recuperación de botes procurando lanzamientos rápidos y seguros y capacidades de operación mejoradas con respecto a otros sistemas similares.

Gracias a este sistema, el buque puede operar un RHIB de clase 9 m y otro de clase 7 m almacenados sobre rampas oblicuas en la popa del buque. Los lanzamientos y las recuperaciones se hacen en algunos minutos, mientras el buque esté navegando y con fuerzas especiales a bordo.

Ambos RHIBs están entregados con el OPV (las características principales se encuentran en el anexo B).

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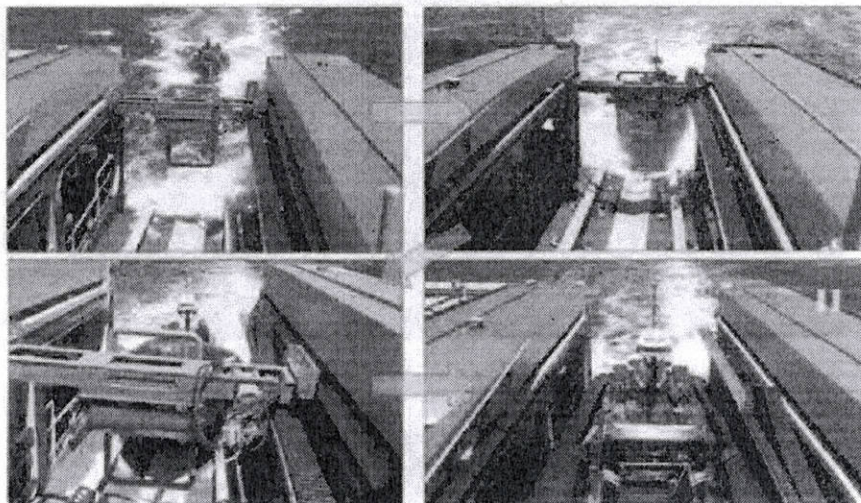


Figura 10. Operación de recuperación del RHIB a bordo de L'Adroit (Figura no contractual)

Antes del lanzamiento, las fuerzas especiales pueden preparar sus operaciones ocultas por los lados del buque y las puertas de popa sin alertar así el buque visitado. La operación puede estar supervisada desde el Puente. En caso de detención, una cárcel es disponible a proximidad de la zona de los RHIB.

Cada rampa está equipada con dos puertas cerradas al no utilizarse el sistema. Así se limita la penetración masiva de agua de mar en la rampa.

3.4 Helicóptero

La cubierta de vuelo está diseñada para permitir el despegue y el aterrizaje de un helicóptero de la clase 10 t y está equipada con una grilla.

Las operaciones del helicóptero están controladas directamente desde el Puente el cual procura una vista directa a la cubierta de vuelo y permite el control de las operaciones por el Comandante.

El OPV L'Adroit está equipado con un hangar dimensionado para recibir un helicóptero de la clase 5 t.

El sistema de combustible aviación está modificado para almacenar, tratar y distribuir el fuel tipo JA-1 (capacidad aproximada de 10 m3).

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Figura 11. Hangar del helicóptero de L'Adroit (Figura no contractual)

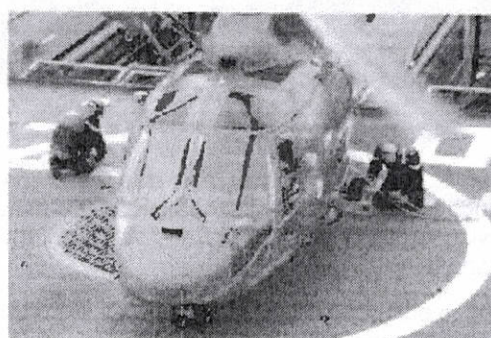


Figura 12 Helicóptero a bordo de L'Adroit (Figura no contractual)

3.5 Puente

El mando y control de las operaciones rutinarias del buque está centralizado en el Puente con una vista 360° que aumenta la seguridad marítima y procura una visión general en la cubierta de vuelo y en las rampas de lanzamiento de popa.

El Puente incluye:

- Un Sistema de Gestión de la Plataforma PMS (Platform Management System);
- Un Sistema de Gestión de Combate CMS (Combat Management System); y
- Un Sistema de Navegación Inercial INS (Integrated Navigation System).

En situación normal de operación, el buque se supervisa y se controla desde el Puente. El Puente constituye la ubicación dedicada para el control de la navegación, las operaciones de plataforma, y la posición de seguridad náutica y de control de misión.

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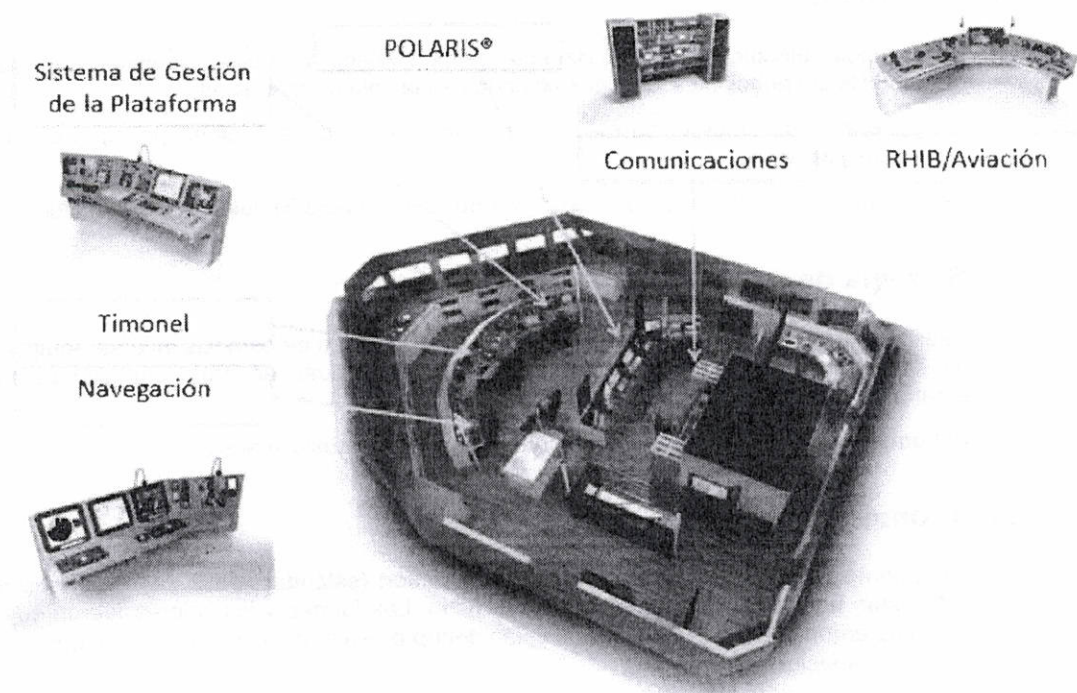


Figura 13. Organización del Puente (Figura no contractual)

El Sistema de navegación cumple con las reglas BV / SOLAS

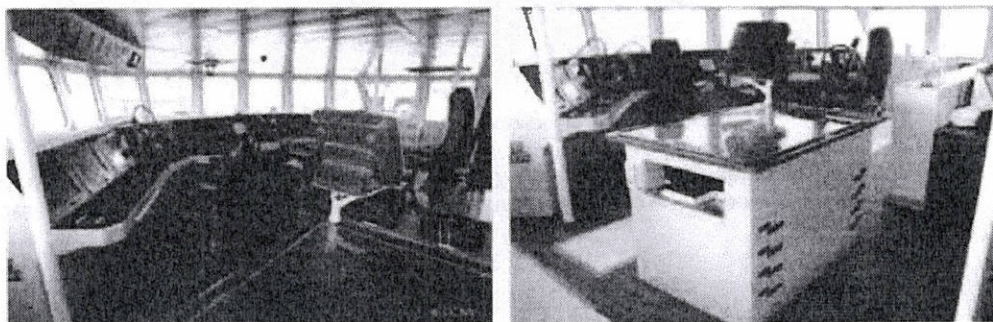


Figura 14. Mesa de cartas y visualización giratoria ECDIS/ARPA (Figura no contractual)



3.6 Electricidad

La potencia eléctrica 440 V/60 Hz está proporcionada por dos conjuntos Generadores marinos Diésel principales idénticos ubicados en la sala de máquinas.

Un generador de emergencia está ubicado por encima de la cubierta principal de acuerdo con las regulaciones.

Se suministra también un convertidor 50Hz/60Hz y un cable flexible de alimentación.

3.7 Sistema de agua dulce

Básicamente, el agua dulce está producida por una unidad de osmosis inversa equipada con un kit de post tratamiento capaz de producir una calidad de agua cumpliendo con los estándares locales.

El buque está equipado con una segunda unidad de osmosis inversa.

3.8 Acomodaciones

Las acomodaciones proveen un alto nivel de confort (estándar ANEP 24). Los espacios de vida están ubicados lejos de las zonas de ruido. Las formas y los colores fueron sujetos a estudios ergonómicos. Los sanitarios están dentro o cerca de las cabinas. El buque contiene también espacios recreativos.



Figura 15. Acomodaciones del OPV L'Adroit (Figura no contractual)

Las acomodaciones de los oficiales y de la tripulación están equipadas con muebles chapados de madera. Todos los muebles de madera cumplen con las reglas de Clasificación.



4 Sistema de Combate

El Sistema de Combate del OPV L'Adroit se compone de:

- Una selección de sensores perfectamente adaptados a este tipo de buque; y
 - Un CMS Polaris® (Combat Management System) diseñado para buques tipo OPV.
- Polaris® ha sido probado intensamente al mar por la Marina Francesa, en el OPV L'Adroit, pero también en fragatas, buques de transporte anfibios y un portahelicópteros.

El Sistema de Combate del OPV incluye los equipos siguientes:

- 2 radares de navegación (1 radar estando conectado al CMS)
- 1 radar de vigilancia Aire/Superficie;
- 2x 12.7 mm ametralladoras;
- 1 sistema de reproducción de imagen térmica;
- 1 sistema de comunicación operacional;
- 2 consolas para el CMS Polaris®; y
- 1 cañón de 30 mm;

La arquitectura del sistema de Combate está presentada en la figura siguiente.

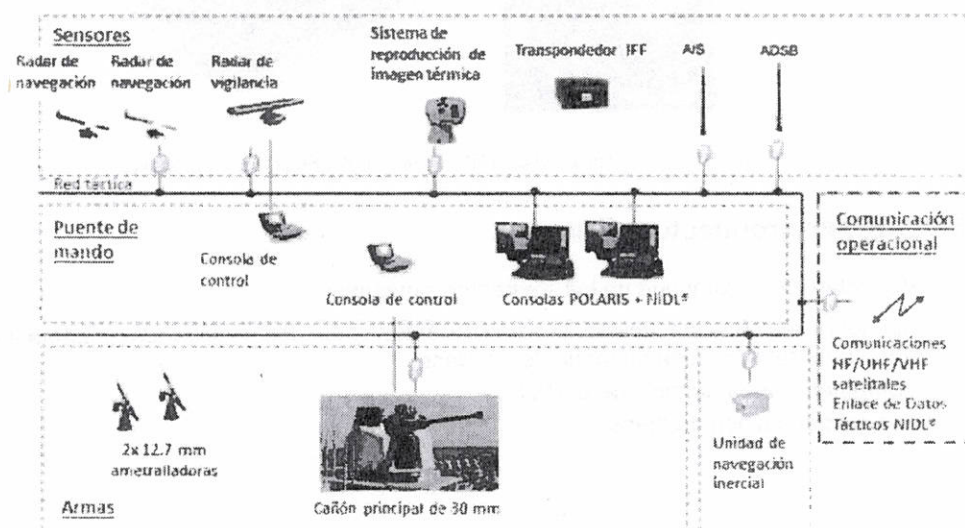


Figura 16 Arquitectura del Sistema de Combate (Figura no contractual)

4.1 EI CMS POLARIS®

Polaris® ofrece una solución compacta para responder a las necesidades de vigilancia y de protección de zonas costeras y de zonas económicas exclusivas conducidas por Armadas y Guardacostas.

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De uso sencillo, Polaris® integra datos procedentes de diferentes sistemas de vigilancia y de identificación, calcula, evalúa y establece la situación táctica. Polaris provee entonces el Comandante con elementos clave para una mayor eficacia operacional.

Utilizando una arquitectura abierta, modular, flexible y basada en tecnología COTS, Polaris® puede fácilmente evolucionar para incorporar mejoras y actualizaciones durante la vida del buque.

El CMS Polaris está operado desde el Puente.

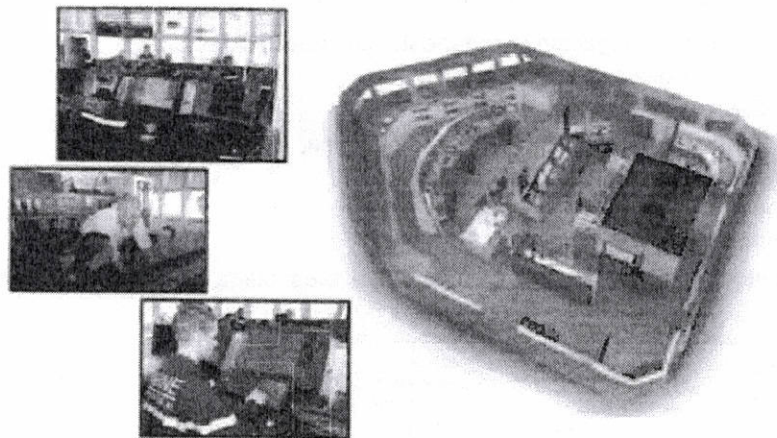


Figura 17. Ubicación del CMS en el Puente (Figura no contractual)

4.1.1 POLARIS®: arquitectura física

El CMS Polaris® se compone de los elementos siguientes:

- 2 consolas multifunción ubicadas en el Puente, cada una incluyendo 2 pantallas, un computador táctico y una pasarela de interface;
- 1 computador para administrar el CMS; y
- 1 red de distribución de datos.



Figura 18 Consola multifunción POLARIS® a bordo de L'Adroit (Figura no contractual)

4.2 Vigilancia aérea y de superficie

4.2.1 Radar de vigilancia

El buque está equipado con un radar de vigilancia 2D Terma Scanter 6002 2D.

El transmitter-receiver del Scanter 6002 opera en banda X y proporciona simultáneamente un video radar normal y un video MTI (Moving Target Indicator).

El radar es capaz de ajustar su frecuencia entre 9,000 y 9,500 MHz, teniendo en cuenta el ambiente electro-magnético a bordo y optimizar en particular la Compatibilidad Electro-Magnética (EMC) del buque.

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La antena está ubicada debajo de un radomo:

- Procurando una protección contra las condiciones ambientales adversas;
- Ofreciendo 360° de cobertura sin ningún ángulo ciego.

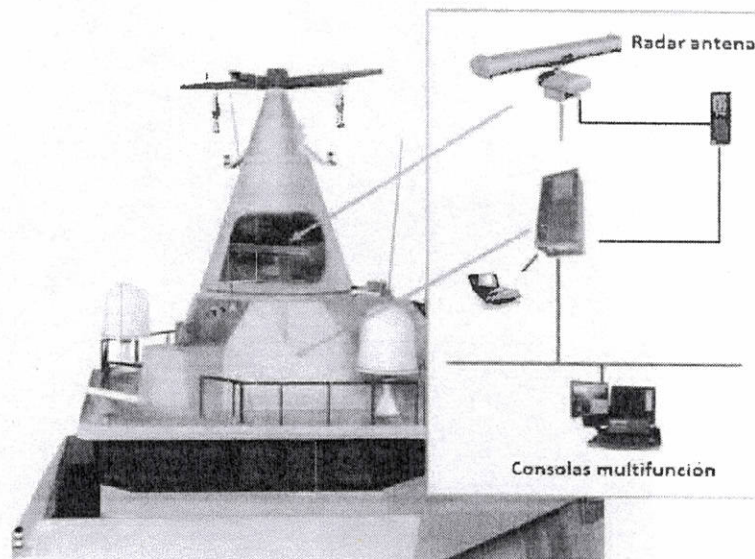


Figura 19 Radar de Vigilancia (Figura no contractual)

4.2.2 Sistema de reproducción de imagen térmica

Un Sistema de reproducción de imagen térmica está instalado en el mástil para procurar una capacidad de vigilancia de día y de noche y para la adquisición y tracking de blancos.

El sistema de reproducción de imagen térmica se utiliza para:

- Vigilancia óptica;
- Reconocimiento e identificación a corta distancia por medio de zooms;
- Tracking de blancos con pocas capacidades de maniobra;
- Enviar una designación de blanco al CMS; y
- Operaciones de Búsqueda y Rescate (SAR).

4.3 Armas

4.3.1 Ametralladoras pesadas

Dos ametralladoras de 12.7 mm están instaladas en las alas babor y estribor del Puente en la parte trasera.

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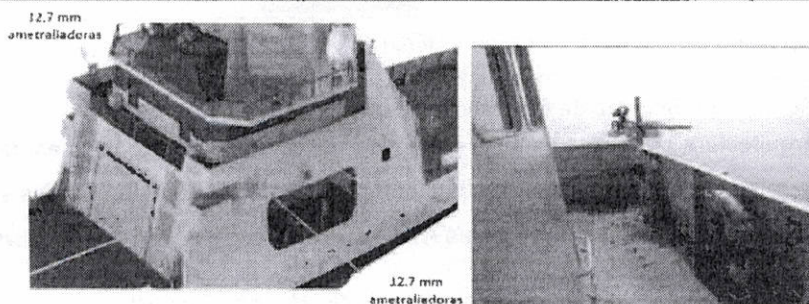


Figura 20. Ubicación de las ametralladoras (Figura no contractual)

4.3.2 Cañón principal – 30 mm

El buque está equipado con un cañón de 30 mm.

El sistema cañón está completamente estabilizado y autónomo.

El sistema cañón se controla a distancia desde el Puente en modo "stand-alone" usando una consola de control a distancia (RCC).

El sistema cañón recibe una designación de blanco desde el CMS.

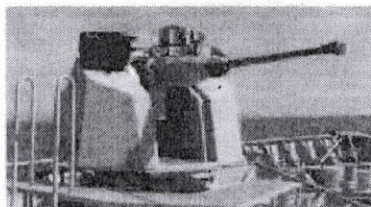


Figura 21. Cañón de 30 mm (figura no contractual)

4.4 Comunicaciones

El sistema de Comunicaciones tiene capacidades de comunicaciones tanto internas como externas.

Este Sistema está construido alrededor de una red de datos IP. Las comunicaciones internas de datos y de voz están distribuidas e intercambiadas a bordo a través de esta red, mientras las comunicaciones externas se hacen con equipos de radio y con enlace satélite.

Las bandas de frecuencia de los equipos de radio ofrecen una cobertura desde HF hasta UHF.

El Sistema de Comunicaciones permite comunicar de buque-a-buque, buque-a-tierra y buque-a-aeronave militar (UHF), tanto civil como militar, y en todo modo relevante de operación. Estos modos de operación incluyen comunicaciones de voz (claras y cifradas).

El Sistema de Comunicaciones proporciona los servicios siguientes:

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- Servicios de voz clara con radios HF/UHF/VHF;
- Servicios de datos con INMARSAT;
- Gestión del Sistema de Comunicaciones.

La arquitectura propuesta se basa sobre una red de datos integrada y segura.

El Sistema de Comunicaciones se compone de los principales subsistemas siguientes:

- Equipos de comunicación externa (HF, UHF, VHF radios) y un terminal INMARSAT1 ;
- Distribución negra;
- Distribución LAN (2 niveles de distribución IP: Público, Restricto);
- Sistema táctico de voz (Servidores y Terminales tácticos de voz).

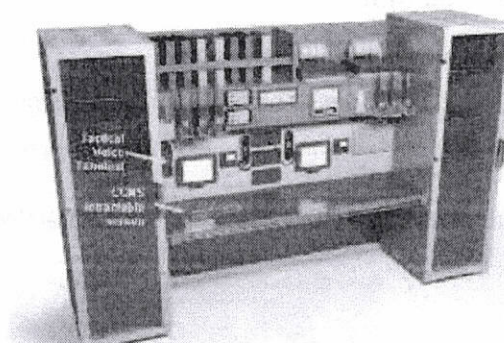


Figura 22. Consola de Comunicaciones (Figura no contractual)

4.5 Enlace de Datos Tácticos NIDL®

El sistema de comunicaciones incluye un enlace de datos tácticos NIDL®.

El CMS proporciona la compilación de la situación táctica con la información recibida desde el enlace de datos tácticos.

El NIDL® puede usar el recurso de radio de UHF provisto por el sistema de comunicaciones operando un módem de banda angosta.

4.6 GMDSS

El buque está equipado con un sistema GMDSS (Global Maritime Distress and Safety System) para las zonas A1, A2 y A3.

1 La suscripción a los servicios Inmarsat permanece una responsabilidad de la Armada Argentina

A. Abreviaciones/Acrónimos/Glosario

A

ANEP	Allied Naval Engineering Publication
ARPA	Automatic Radar Plotting Aid

B

BV	Bureau Veritas
----	----------------

C

CCMS	Communication & Command Management System
CMS	Combat Management System
COTS	Commercial Off The Shelf
CPP	Controllable Pitch Propeller

D

DAD	Diesel And Diesel
-----	-------------------

E

ECDIS	Electronic Chart Display Information System
EMC	Electro Magnetic Compatibility
EMI	Electro Magnetic Interference

G

GFE	Argentina Furnished Equipment
GMDSS	Global Maritime Distress and Safety System

I

INS	Integrated Navigation System
IR	Infrared

M

MCR	Maximum Continuous Rating
MFC	Multifunction Console

O

OPV	Offshore Patrol Vessel
-----	------------------------

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P

PMS Platform Management System

R

RHIB Rigid-Hull Inflatable Boat

RF Radar Frequency

S

SAR Search and Rescue

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B. Características de los RHIB

El objetivo de este apéndice es de listar las principales características de las embarcaciones entregadas con el OPV L'Adroit. Estas embarcaciones tienen una estructura sólida y son especialmente diseñadas para operaciones de raid, asalto y rescate.

	Zodiac Hurricane 780 H780DJ Clase 7m	Zodiac Hurricane 935 H935 MID IO "L'Adroit" Clase 9m
Dimensiones principales		
Eslora total	7.92 m	9.39 m
Manga máxima	2.74 m	3.10 m
Peso máximo	3,500 kg	7,500 kg
Capacidades		
Tripulantes	2 con asientos suspendidos	2 con asientos suspendidos
Pasajeros	3 con asientos suspendidos	8 con asientos suspendidos (max. 14 personas)
Tanques	359 l	2x 275 l
Características principales		
Casco (tipo) / Cubierta	Aluminio (deep "V")	Aluminio (Mach II hull)
Flotadores	Durarib (hypalon)	Durarib (hypalon)
Motor	Inboard diesel 1x 480 HP Cummins QSB5.9 o equivalente	Inboard diesel 2x 280 HP Steyr Engine MO286 o equivalente
Transmisión	ZF 280-1 1x HJ292 water jet	Mercruiser Bravo 1X 1x hélice (single)
Equipos		
Luces de navegación	Led (de acuerdo con COLREGs)	Led (de acuerdo con COLREGs)
NAV / COM suite (civil)	Si	Si
Reinforced towing ring	Si	Si
Wash stand	Si	Si, 6 retractable rings

Anexo B1 3 OPV 87 for the Armada Argentina



Statement of Work



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1 Introduction

1.1 Scope of the Document

This document is the Seller's Statement of Work (SOW) which details the activities for the supply to the Armada Argentina of 3 (three) OPV 87 Offshore Patrol Vessels (OPV) and associated services.

The options selected by the Buyer are listed in Chapter 4.4 of this SOW.

1.2 Designations & Definitions

The following designations and definitions are applicable to the current SOW.

Table 1. Programme stakeholders designations

Parties' name	Designation
The Buyer	The Armada Argentina (or ARA)
The Seller	NAVAL GROUP
Parties	The Buyer and the Seller
Armada Argentina (ARA)	The End User
Classification Society	BUREAU VERITAS (BV)

Table 2. Programme definitions

Term	Definition
Programme	OPV 87 Programme for the Buyer
Ship	The proposed type of ships (OPV 87)
OPV 1, 2 or 3	Refers to the first of class and the follow-on OPV to be built
Contract	The Contract between the Buyer and NAVAL GROUP
T0	Date of coming into force of the Contract
Acceptance	Process demonstrating that a product is compliant with the specified requirements. This process leads to a formal acceptance decision by the Buyer.
Acceptance Test	Test (verification or trial) that has to be performed before Acceptance by the Buyer



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1.3 Scope of Supply

The present Statement of Work deals with the supply of 3 (three) OPV 87 Offshore Patrol Vessels as described in the Anexo A to the Contract (Technical Description) and their initial logistic package, the vessels being built as follows:

OPV 1 to 3 will be built in France by the Seller.

The Contract Data Requirements List (CDRL) supplied in C compiles the list of documents and data to be delivered by the Seller to the Buyer in the frame of the current Statement of Work.

1.4 Preliminary Schedule

A preliminary schedule is supplied in the Anexo D to the Contract. Two months after T0, the Seller will deliver a detailed schedule which will outline the main contractual and industrial phases.



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2 Programme Organization

2.1 Naval Group Responsibilities

NAVAL GROUP is the Prime Contractor (or the Seller).

A Programme Team will be set up by the Seller to manage the entire scope of activities in France and in Argentina.

This team will be in charge of:

- Programme organisation;
- Activities breakdown and sequencing;
- Schedule management;
- Configuration management;
- Risks management;
- BFX management;
- Initial Logistic Support;
- Quality assurance;
- Documentation management;
- Ship acceptance.

2.2 Naval Group as Design Authority

2.2.1 Overall Architecture

On the final product and within its specific expertise range, NAVAL GROUP is responsible for the safety, the compliance to applicable regulations and the overall technical performances of the ship.

2.3 Reviews and Meetings

The following reviews and meetings will be held in the Seller's premises in France or in the Buyer's premises in Argentina:

- Kick-off meeting of the Programme before T0+1;
- Regular meetings, on a monthly basis, with the "Comisión de Inspección" (CI) of the Buyer in France for OPV 1 to 3;
- Progress meetings on a 6-month basis, in France for OPV 1 to 3;
- Acceptance reviews in France for OPV 1 to 3.

For every progress meeting, a progress report will be delivered to the Buyer describing the Programme main activities progress based on the following topics:

- General schedule of the Programme with progress of main tasks;
- Addressed period outstanding events;
- Actions/decisions item sheet update.

In addition and if needed, technical meetings could be held in the Seller's premises in France on dedicated topics. Both Parties will have to agree on the schedule of such meetings.

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Each Party shall bear its own costs to attend those meetings and reviews.

2.4 Buyer's Responsibilities

2.4.1 Buyer Management Team

The Buyer shall set up a management team. This team will ensure coordination between the Seller and the Buyer's authorities and:

- Will be the representative of the Buyer;
- Will attend the progress meetings and the contractual reviews;
- Will pronounce the acceptance of the OPV and other deliverables;
- Will make decisions in a timely manner, compatible with the Programme's schedule.

A "Comisión de Inspección" will represent the Buyer management team in the Seller's shipyard in France. The CI shall have the necessary authority and delegation to act on behalf of the Buyer management team, to make decisions in a timely manner according to the Programme general schedule and to approve the acceptance tests to be carried out on the ships.

The CI is composed of a maximum of seven members and will arrive in France one month before the first steel cutting of OPV1 (T0+6) until the delivery of OPV3 (T0+38).

Living costs in France (accommodation, meals, insurances, transportation, and communication) of the CI shall be borne by the Buyer.

In France, the CI will benefit of office spaces with standard amenities, laptops and an internet line.

2.4.2 Buyer Furnished Equipment, Information and Services

Equipment designated as "Buyer Furnished Equipment" (BFE) and Information designated as "Buyer Furnished Information" (BFI) and "Buyer Furnished Services (BFS) shall be supplied by the Buyer in a timely manner according to the Programme general schedule.

The list of BFE, BFI and BFS (BFX) is given in B of this SOW. The delivery dates of these BFX are agreed by the Parties in accordance with the Programme general schedule.

2.4.3 End User Certificates

When requested, after T0, End User Certificates (or Non Transfer Certificates) from other countries than France presented by the Seller for OPV equipment or components shall be signed by the Buyer in a timely manner according to the Programme general schedule.

2.4.4 Navigation Authorizations

All navigation authorizations under French flag shall be obtained by the Seller for each Ship according to the Programme general schedule.

All navigation authorizations under Argentinian flag shall be obtained by the Buyer for each Ship according to the Programme general schedule.

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3 Language

Ships documentation, labels on-board and equipment documentation will be in Spanish language except for the navigation system equipment for which an English version of the documentation is mandatory (IMO requirement).

Man Machine Interfaces will be in Spanish language for Alarm management and PMS systems, and will be in English language for all other systems.

Ship Acceptance File, Acceptance Tests Procedures (ATP) and Acceptance Tests Reports (ATR) will be in English language.

Training sessions and training documentation will be in English.

Computerized Maintenance Management System (CMMS) system will be in Spanish.

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4 Seller Scope of Work

4.1 General

The following tasks will be performed by the Seller; they are all described in the following chapters:

- Design of the Ship
- OPV 1 to 3 building, tests and delivery in France
- Implementation of the selected options

4.2 Design

The design of the OPV 87 is based on a sea proven design owned by NAVAL GROUP and adapted to the technical needs expressed by the Armada Argentina.

Design and construction of the Ships will be compliant with BV requirements.

This design phase also enables the Seller to define the integration, setting-to-work and validation activities related to the OPV combat system.

The design of the 3 (three) ships is described in the Technical Description [Anexo A] of the Contract.

4.3 OPV Building, Tests and Delivery

4.3.1 Preamble

All activities regarding OPV 1 to 3 will be performed in France in the Seller's premises. The ships will be delivered to the Buyer in France FCA French shipyard (Incoterms 2010).

4.3.2 Building

The Seller is responsible for the suppliers' selection for the production of the ships. A tentative list of manufacturers is mentioned in the Anexo A of the Contract.

The building will be carried out in France by the Seller, throughout the following tasks:

- Procurement;
- Hull construction;
- Seating production and fitting on-board;
- Painting;
- Piping;
- Heating, Ventilation, Air Conditioning (HVAC) system outfitting;
- Accommodation outfitting;
- Equipment mounting;
- Cable laying and connection activities;
- Combat System integration.

The building process is described in the Appendix D.



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4.3.3 Tests

The Seller will plan the Tests to be performed on the ships.

The list of Acceptance Tests is given in the Anexo F of the Contract.

4.4 Selected Options

The following options have been selected by the Buyer.

4.4.1 Initial Logistic Support

The following Initial Logistic Support elements will be delivered:

- Technical documentation;
- Initial set of on-board spare parts and maintenance consumables;
- Initial crew training for OPV 1 and OPV 2 (operation of the vessel and on-board maintenance tasks);
- DLM maintenance training (for ARA's arsenals maintainers);
- Mobile equipment.

Those logistic elements are described in the Anexos C y E of the Contract.

4.4.2 Transit

The three ships will be delivered by the Seller to the Buyer in France immediately after their acceptance.

In order to allow a safe and direct transit from France to Argentina, the ships will be delivered with full tanks of fresh water, Diesel fuel, lubricants, as well as sufficient food for a crew of 32 people to sustain the direct transit to Buenos Aires.

4.4.3 POLARIS® Combat Management System and NiDL® Tactical Data Link

POLARIS® Combat Management System and NiDL® Tactical Data Link functions and operational capabilities are described in the Anexo A of the Contract.

4.4.4 Stock of Ammunitions for the Three Ships

This stock includes a total of:

- 30 mm main gun: 20,000 rounds:
 - 7,000 HEI-T or CNT/CNT-I (Capacidad Normal Trazante – Incendiaria);
 - 7,000 HEI or CNI (Capacidad Normal Incendiaria);
 - 5,000 SAPHEI-T or PT (Perforante Trazante);
 - 1,000 TP (Munición de ejercicio).
- 12.7 mm (Heavy Machine Guns): 20,000 rounds:
 - 10,000 API-T or PT (Perforante Trazante);
 - 9,000 API or PC (Perforante Común);
 - 1,000 TP (Munición de ejercicio).



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The ammunition will be delivered in containers under CIF "Puerto de Buenos Aires" Incoterm 2010. The delivery process of the ammunition will be discussed between the Seller and the CI after T0.

4.4.5 Containerized Anti-Pollution Barrage (Quantity: 2)

This containerized anti-pollution barrage and dispersant system can be deployed as described in the Anexo A of the Contract.

The 2 containers will be delivered with OPV 1 and/or OPV 2 or under CIF Incoterm 2010 "Puerto de Buenos Aires".

The storage of the 2x10-foot containers on the forward part of the helicopter platform doesn't allow the handling of the helicopter. Landing of a Dauphin/Panther helicopter is only permitted.

4.4.6 Containerized Diver Support and Compression Chamber (Quantity: 2)

This containerized diver support and compression chamber can be deployed as described in the Anexo A of the Contract.

The 2 containers will be delivered with OPV 1 and/or 2 or under CIF Incoterm 2010 "Puerto de Buenos Aires".

The storage of the 2x 20-foot containers on the forward part of the helicopter platform doesn't allow any helicopter operation.

4.4.7 Aviation Equipment

The Helicopter handling system is described in the Anexo A of the Contract.

The landing grid is described in the Anexo A of the Contract.

4.4.8 Propulsion and Stabilization

The propulsion system and the active stabilization system are described in the Anexo A of the Contract.

The 16V Diesel Engines configuration is not compatible with the FLUME passive stabilization system and is therefore combined with an active stabilization system with fixed fins.

4.4.9 Live Firing of 30 mm Gun on OPV1

A live firing test of the main gun (30 mm gun) will be performed on board OPV 1, in Argentina, after the ship acceptance and delivery to the Buyer.

- The Buyer, as the crew of the Argentinian Navy ship, will be responsible for:
- The direction of the firing test, including safety management,
- The carrying and loading of ammunition,
- The operation of the main gun.

Ammunition for firing will be provided by the Buyer and shall be "Target Practice" ammunition (TP). The Argentinian operators will have to be trained to handle the main gun.

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During the trials, NAVAL GROUP will be in charge of the following activities:

- Instrumentation of the main gun and of the own ship thermal imaging system (video recorder),
- Recording data from POLARIS,
- Supporting the gun operator in the Bridge during firing,
- Supervising the gun supplier (Leonardo) representatives.

A safety document will be provided by the Seller in order to present the safety recommendations (unauthorized area, expected behaviour in case of emergency ...). This document will be provided in order to be discussed and updated with own rules of the Argentinian Navy.

The Argentinian Navy shall be in charge of the firing and safety onboard and in the firing area.

NAVAL GROUP will provide the Buyer with a firing procedure, including type of firing (single shot and burst), environmental conditions, probability of kill, expected performances, and pre-requirements to run the test. This procedure will be submitted to Argentinian Navy for agreement. No simulation of performance is included in the scope of work.

The Argentinian Navy shall provide suitable surface target to run the firing trial as defined in the firing procedure.

Trials will take place over a period of one week. Two days will be dedicated for effective firing tests.

Firing tests report will be produced by NAVAL GROUP after the end of the relevant tests.

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5 Acceptance

5.1 Ships Acceptance Process

The three (3) ships delivered by the Seller to the Buyer are submitted to Acceptance.

The verification process set up by the Seller demonstrates that the delivered products are compliant with the requirements and that the quality standards and processes have been correctly implemented.

The acceptance process of the ships will be based on the completion of the following steps:

- All the Tests listed in the Anexo D of the Contract are successfully achieved;
- The inspection of compartments is successful;
- BUREAU VERITAS has issued classification certificates based on the tests and inspections performed during the building of each ship. If some BV certificates are provisional at delivery, they will remain provisional;
- The delivery of a Declaration of Conformity of the OPV by the Seller.

The ships' final acceptance will be pronounced by the Buyer during the Final Acceptance Review (FAR). A Final Acceptance Certificate (FAC) will be signed by the Parties representatives at the end of the FAR of each ship.

5.2 Deliverables

All deliverables are subject to Export Control regulations. The Seller shall not be liable for any Governments' delays, refusal or withdrawal of any such license or authorisation.



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6 Exclusions

Any supply/work that is not explicitly mentioned in this SOW is considered excluded from the Contract.

As a reminder, the present SOW does not include:

- Any modification to the ships' design described in the Anexo A of the Contract;
- Any supply and maintenance of BFX as listed in B of this SOW;
- Performance of maintenance of the ships after their delivery to the Buyer in France and Argentina;
- Any additional maintenance training other than OLM training or DLM training as described in the Anexo C of the Contract;
- Any military training or operational crew training;
- Any training of specialized personnel: helicopter pilots and technicians, mechanics, doctors, medics, cooks, gunners...
- Any firing test for the Main gun or Heavy Machine Guns (NB: functional test will be performed on board each ship) other than the one described in Chapter 4.4.9;
- Any additional tests which may be required by the Buyer;
- Any living costs for the CI and the crews in France;
- Any travel cost from Argentina to France shipyard and from France shipyard to Argentina for the CI and the crews;
- The selection of Armada Argentina's trainees;
- Any ILM, DLM or MLM spare parts and documentation;
- BUREAU VERITAS surveys for keeping the classification of the ships after their delivery.

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7 Technical Warranty

The three (3) OPV will benefit from a twelve (12) months warranty after the signature of the Final Acceptance Certificate by the Parties representatives in France.

The warranty period of each vessel shall not exceed five hundred and fifty (550) days after the end of the Sea Acceptance Tests.

One warranty engineer will be set up by the Seller from OPV 1 Acceptance until the end of the OPV 3 warranty period, as per Article 14 of the Contract.

Should a defect happen while the ship is underway, the Buyer will have the right either:

- To continue operating the defective equipment with reduced performance as per the requirements of the documentation. In such case, the priority shall be given to the safety of the OPV and her crew; or
- If the defective item is identified and a spare is available onboard the vessel, to perform the corrective maintenance as per the procedure of the maintenance documentation.

The Buyer shall issue a warranty claim in English to the Seller within fourteen (14) days after the defect is discovered, with all information supporting the claim including a detailed description of the defect and its context. The Seller shall be entitled to make the necessary investigations in order to verify the defect and the involvement of its liability.

In case a warranty expertise is needed, the place of this expertise shall be Puerto Belgrano, Bahia Blanca, Argentina. Mutual expertise shall be carried out by the Parties to determine the origin of the fault and the responsibilities, as well as the decision to repair or to replace the defective part. Should the expertise determine that the defect is not under the Seller liability, then the Seller will counter-claim the expenses suffered by him for mobilisation of its representatives for that purpose.

Special tools, instruments, spares, devices, technical documentation and accessories non-available on site will be brought by the Seller ("Seller's gear").

The Seller's gear shall be imported to Argentina for warranty service of the OPVs. After the end of relating warranty services, this gear shall be re-exported from Argentina without administrative hindrance for the Seller. Transportation of this Seller's gear to workplace is conducted by the Seller at his own expense.

The Seller's gear will be brought by the Seller in Argentina, under the rules of temporary importation applicable in Argentina in such situation. The Buyer shall be in charge of such Argentinian temporary importation and re-exportation procedures as well as Custom clearances and expenses if any. The Seller shall provide the necessary support and information to that effect in due time, including the detailed list of Seller's gear. The storage of such Seller's gear at workplace shall be provided by the Buyer. The Buyer shall also be in charge of any procedure dealing with definitive importation of Seller's gear if mutually agreed by the Parties. The support provided by the Buyer under this paragraph shall be at no cost for the Seller.

Spare parts and tools owned by the Buyer, if available, shall be used by the Seller to repair; then the defective part shall be returned to the Seller facilities in France. The transportation costs of such defective part between Puerto Belgrano and France (outward and inward) shall be borne by the Seller. The Custom costs and taxes in Argentina, if any, shall be borne by the Buyer.

The defective part(s) shall be returned to the Seller's (or its sub-contractor's) factory duly packed by the Buyer. Such defective part shall be returned to France under temporary

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importation license. The Buyer shall provide in due time to the Seller the documents necessary for performance of such temporary importation in France. The property of any replaced defective part shall pass from the Buyer to the Seller upon delivery of the replacing part to the Buyer.

Should dry-docking be necessary for the performance of the repair operations in the frame of the warranty, the costs of dry-docking shall be borne by the Seller and associated industrial facilities such as lifting facilities and energy, shall be borne by the Buyer. The place of dry docking is assumed to be Puerto Belgrano, Bahia Blanca, Argentina, on the Navy naval base. The wharfages and tugs costs when entering/taking back the ship in/from the dry-dock, shall be borne by the Buyer. The mounting and dismounting costs shall be borne by the Seller with the technical support of the Buyer.

For major equipment which cannot be removed from the ship, expertise will be carried out by the Seller together with qualified personnel of the Buyer (DLM maintainers).

In case of necessity further expertise should be performed by the warranty engineer and the OEM (local or abroad representatives), as well as relevant repair if needed.

The repair timeframe of the defective equipment will be added to its initial warranty duration. However, the total warranty period for such concerned equipment shall not exceed five hundred and fifty (550) days in aggregate from the date of the Acceptance of the concerned OPV. Should the Seller determine that the defective equipment is not under its liability, then the Seller may perform the necessary repair or replacement after a mutual agreement has been reached with the Buyer on the price of such repair or replacement, in addition to the expenses suffered by the Seller for mobilisation of its representatives for that purpose. In such a case, all the Seller's costs relating to the repair or replacement of defective parts shall be borne by the Buyer.

The CMS software (Polaris® & NiDL®) will benefit from a twelve (12) months warranty period after the Acceptance of each OPV.

In case of CMS anomaly, the Buyer shall transmit a CMS warranty claim to the Warranty Engineer, describing in detail the problem and its context.

The Seller will analyse the problem and, if an anomaly in the software is confirmed, the correction will be made and tested using a CMS reference platform located in the Seller's premises in France and available until the end of the CMS software warranty period.

The correction will be provided through a Service Pack (SP) or within the end-warranty version depending on the criticality of the anomaly. The implementation on board of this SP or of the end-warranty version shall be done only by trained Buyer's personnel.

Minor anomaly (with no impact on OPV nominal operations) will be corrected with the end-warranty version programmed to be delivered 12 months after Acceptance of OPV 3.

After the warranty period, the follow-on technical support of the CMS, including potential evolutions, if requested, shall be addressed through another contract.

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A. Acronyms**A**

ATP Acceptance Test Procedure

B

BFE Buyer Furnished Equipment
BFI Buyer Furnished Information
BFS Buyer Furnished Services
BFX Buyer Furnished E or I or S
BV BUREAU VERITAS

C

CDRL Contract Data Requirements List
CI Comisión de Inspección
CMMS Computerized Maintenance
Management System
CMS Combat Management System
CNI Capacidad Normal Incendiaria

D

DLM Depot Level Maintenance

E

ENC Electronic Navigation Chart

F

FAC Final Acceptance Certificate
FAR Final Acceptance Review

HHVAC Heating, Ventilation and Air
Conditioning**I**

ICD Interface Control Document
IGD Installation Guide Document
ILM Intermediate Level Maintenance
IMO International Maritime Organization

O

OEM Original Equipment Manufacturer
OLM On-board Level Maintenance
OPV Offshore Patrol Vessel

P

PT Perforante Trazante

S

SOW Statement of Work

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**B. Buyer furnished equipment Information and services
(BFX)**

For the delivery of each of the three (3) ships, the Buyer shall provide the Seller with the following BFX:

- Helicopter associated equipment:
 - To be confirmed if any;
 - BFI to be delivered at T0+1.
- Small arms and associated ammunition:
 - To be confirmed if any;
 - To be sent to France and managed by the Armada in due time;
 - BFI to be delivered at T0+1.
- IP crypto and Tactical Data Link crypto:
 - To be confirmed if any and if delivered in France;
 - BFI to be delivered at T0+1;
 - BFE to be furnished in France 8 months before delivery of each OPV;
 - BFS to be furnished by the Armada with the technical assistance of the manufacturer on due time;
 - Cryptos will be delivered with their keys, key loaders, key generators, mating connectors and mounting kits;
 - Mating connectors and mounting kits will be delivered to French Shipyard 9 months before delivery of each OPV.
- 2 firewalls for the communication system
 - To be confirmed if any and if delivered in France;
 - BFI to be delivered at T0+1;
 - BFE to be delivered in France 9 months before delivery of each OPV.
- 2 sets of Electronics Navigational Charts (ENC) in standard format (S57/S63) for both the Combat Management System and the Navigation system:
 - Only the ENC charts for the sea tests in France will be provided by the Seller,
 - BFE to be delivered 8 months before delivery of each OPV.
- Paper charts:
 - Only the paper charts for sea tests in France will be provided by the Seller,
- Personal computers, printers, scanners, mail server:
 - BFI to be delivered at T0+1;
 - BFE to be delivered in France 8 months before delivery of each OPV;
 - BFS to be furnished by the Armada with the technical assistance of the manufacturer on due time.
- Medical equipment and medicines:
 - Each OPV87 will be fitted by the Seller with the regulatory items for the transit,
 - Other items are considered as BFE and are to be delivered for each ship by the Armada on due time.

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- Satellite TV antenna and equipment:
 - BFI to be delivered at T0+1;
 - BFE to be delivered in France 8 months before delivery of each OPV;
 - BFS to be furnished by the Armada with the technical assistance of the manufacturer on due time.
- All flags:
 - Each ship will be fitted by the Seller with all the regulatory international navigation flags;
 - Other items are considered as BFE and are to be delivered for each ship by the Armada on due time.

All the satellite subscriptions for both Inmarsat systems will be provided by the Buyer.

Buyer Furnished Equipment (BFE):

The BFE shall comply with the general requirements common to all equipment fitted on-board ships as defined in the Anexo A of the Contract.

For each BFE, the Buyer shall provide before contract enforcement, the BFE reference and main information defining its configuration.

For equipment to be fitted on-board ships in France by the Seller, the Buyer shall organize and bear costs for BFE transportation according to the DAP Incoterm (French Shipyard). During on-board integration, a BFE suppliers' technical assistance could be required by the Seller as BFS.

Each BFE equipment item shall be provided with its installation kits (including connectors, mating connectors, specific cables and special tools if any).

The Seller shall not be responsible for BFE performances.

In case a BFE is not provided by the Buyer before the ship acceptance, the ship will be delivered "fitted to receive" such BFE, provided the BFI, the mating connectors and the special cables if any, have been delivered in due time by the Buyer. Such BFE shall be installed, set-to-work and tested by the Buyer after Acceptance of the ship at his own responsibility and costs.

Buyer Furnished Information (BFI):

The Buyer will also provide the Seller with BFI at T0+1. They will consist in:

- The Installation Guide Documents (IGD): they shall contain all information requested for physical integration studies:
 - a. Components;
 - b. Dimensions;
 - c. Space requirements;
 - d. Weight;
 - e. Power supply;
 - f. Cooling;
 - g. Fluid needs, connection diagram and cables list;
 - h. EME data
 - i. Interfaces;
 - j. Any specific integration constraints.

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- The Interface Control Documents (ICD): they shall contain all information requested for functional integration studies:
 - k. Data exchange,
 - l. Dynamic of data exchange.

Additional delivery information shall be provided to receive the adequate temporary import certificates from the French Authorities.



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c. Contract Data Requirements List (CDRL)

The Contract Data Requirements List (CDRL) given hereafter defines the list of documents to be delivered by the Seller to the Buyer.


Description	Schedule
Programme Management Plan	T0 + 2 months
Detailed Schedule	T0 + 2 months
Progress Report + updated Master schedule	Every 6 months
Training Plan	T0+ 12
Test Plan	T0+ 20
Harbour and Sea Acceptance Test Report	Minutes: end of test Final Report: + 2 weeks
Ship Acceptance File	Ship's acceptance review
General drawings of the ship	Ship's acceptance review
Ship documentation	Ship's acceptance review

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D. Building Process

The building process into several hull blocks is described in the following figure:

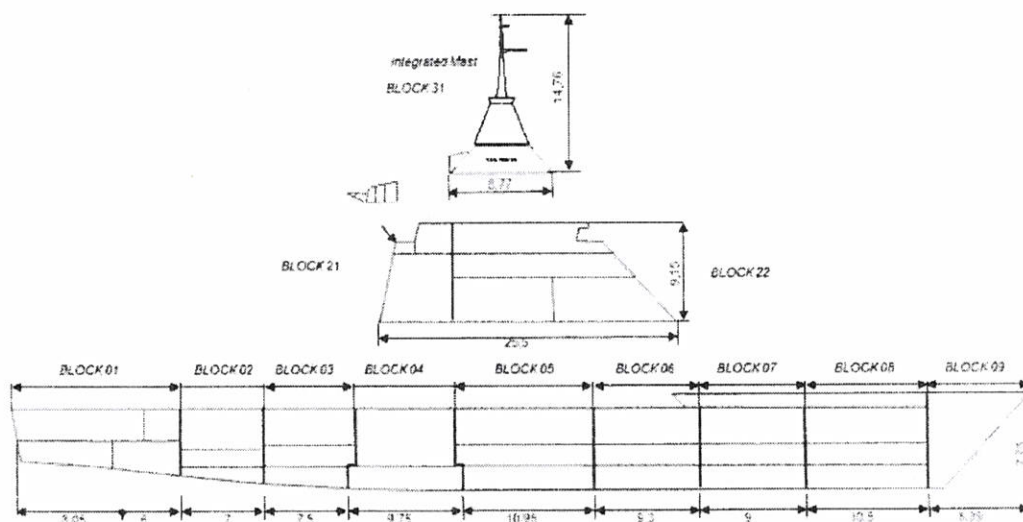


Figure 1. Building Process

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OPV L'Adroit for the Armada Argentina



Statement of Work – ANEXO B2



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1 Purpose and Scope of Supplies

1.1 Scope of the Document

This document is the Statement of Work (SoW) between the Buyer and the Seller which defines all the responsibilities, duties and activities that both the Buyer and the Seller shall undertake in order to provide the Argentinian Navy with one existing OPV in a configuration defined in the reference document and associated services.

1.2 Reference Document

[R1] 2018-OFR-INT-0010: OPV L'Adroit tDescripción Técnica.

1.3 Designations and definitions

The following designations and definitions are applicable in the current SoW:

Table 1. OPV L'Adroit- Programme definitions

Term	Definition
Programme	Contract for the adaptation and the delivery of the OPV L'Adroit to the Buyer + the construction and the delivery of 3 OPV 87 and associated supplies and services
OPV L'Adroit or the Vessel	Offshore Patrol Vessel L'Adroit to be delivered to the Argentinian Navy
Buyer	Armada de la República Argentina (ARA)
Seller	NAVAL GROUP
T0 or EDC	Date of entry into force of the contract (EDC = Effective Date of Contract)
Acceptance	Process demonstrating that a product is compliant with a qualified design and fulfils specified requirements. This process leads to a formal acceptance decision by the Buyer.
Acceptance Test	Test (checks or trials) that has to be passed before Acceptance by the Buyer
HAT	Harbour Acceptance Test conducted on the Vessel, subject to Acceptance by the Buyer
SAT	Sea Acceptance Test conducted on the Vessel, subject to Acceptance by the Buyer
FAR	Final Acceptance Review: last analysis of the remarks and reservations is carried out on the basis of the Acceptance Files gathered during HAT and SAT.

1.4 Scope of Supplies

The present SOW describes the activities related to the supply of the OPV L'Adroit and her associated Supplies and Services:

- The OPV L'Adroit ("the Vessel") as described in [R1]
- Her Initial Logistic Package (on-board spares and documentation)
- Operation and On-board Level Maintenance (OLM) Training

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The OPV L'Adroit is a ship initially designed and built by NAVAL GROUP and currently in service in the French Navy. The ship has been certified by the Classification Society and is currently in operation under the name "L'Adroit".

After return of the Vessel to NAVAL GROUP, the adaptation works phase described in paragraph 4.1 of the present document shall be carried out before delivery to the Buyer.

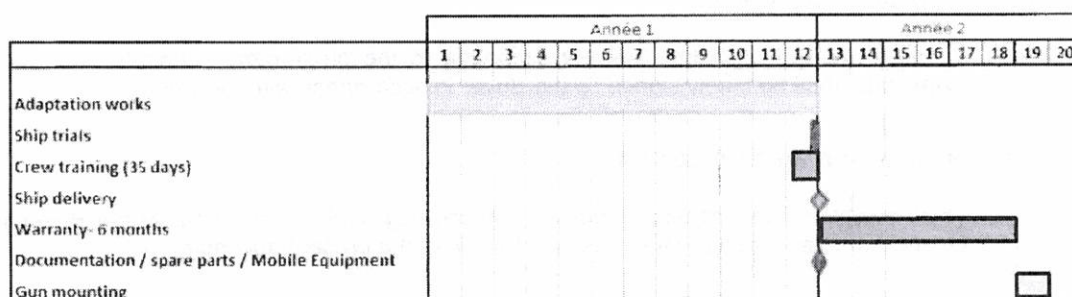
All Supplies listed here above and material or equipment items will be delivered to the Buyer under FCA French Shipyard (Incoterms 2010).

1.5 Master Schedule

The schedule for the OPV L'Adroit delivery will be 12 months after T0 in the configuration described in [R1], without main gun installed but fitted to receive it.

The 30mm gun to be mounted on the OPV L'Adroit by Naval Group's staff, in Argentina, will be delivered 6 months later and will be mounted in 1 month.

One month after T0, the Seller will deliver a detailed schedule which will outline the main contractual and industrial phases.



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2 Programme Organization

2.1 NAVAL GROUP Responsibilities

NAVAL GROUP is the Prime Contractor (or the Seller) for the Programme.

A Contractual Documentation Requirement List (CDRL) concerning the OPV L'Adroit supplied in appendix C of the present document compiles the list of documents and data to be delivered by the Seller to the Buyer.

2.2 Buyer Responsibilities

2.2.1 Buyer Management Team

The Buyer shall set up a management team. This team will ensure coordination between the Seller and the Buyer's authorities.

2.2.2 End User Certificate

To allow the OPV L'Adroit delivery according to the programme schedule, the End User Certificate shall be timely signed by the Buyer in accordance with the Contract.

2.2.3 Navigation Authorization

The navigation authorization under Argentinian flag shall be obtained by the Buyer for the OPV L'Adroit according to the master schedule of the present document.

2.2.4 Buyer Furnished Equipment, Information & Services

Buyer furnished items (collectively referred to as GFX) cover all equipment (GFE), information (GFI), facilities or services (GFS) that are to be delivered by the Buyer to fulfil its own part of contractual obligations concerning the OPV L'Adroit.

The Buyer is responsible for:

- The timely delivery of GFX to the Seller in accordance with the Seller's master schedule;
- Keeping the Seller informed of any risk that may impact GFX delivery dates;
- Providing the Seller with export authorizations and Customs certificates related to GFX;
- Providing the following information (as part of GFI) for all GFE:
 - An interface description (physical and functional);
 - A technical description
 - A safe-storage protocol
 - A certificate of conformance
 - A RoHS certificate

The list of GFX for the OPV L'Adroit is provided in Appendix A of the present document. Delivery dates of these GFE and GFI will be defined by the Seller in the Programme master schedule.

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3 Language

The official language will be Spanish for the Contract.

English will be the language for all technical matters:

- Training courses will be provided in English
- Technical documents will be provided in English.

The existing ship's handbook, safety plan, evacuation plan, layout diagrams, functional drawings and CMS Polaris will be translated and provided in Spanish.

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4 Seller Scope of Work

The Vessel is currently in service and operated by the French Navy under the name of "L'Adroit".

Once the Contract becomes effective, the Vessel will be transferred from the French Navy to NAVAL GROUP.

The following tasks will then be performed by the Seller:

- Adaptation Works
- Tests
- Supply of an Initial Logistic Package (ILP)
- Training of ARA crew for Vessel Operation and On-board Level Maintenance (OLM).

4.1 Adaptation Works

The Adaptation Works will be performed in Toulon (France) on the Vessel in accordance with the description of the Vessel in [R1]. The Vessel will be delivered fitted to receive the 30mm gun (Marlin from Leonardo).

The 30 mm remote control gun will be delivered, mounted and integrated on board the Vessel in Argentina. NAVAL GROUP will carry out the fitting, integration, setting to work, tests of this equipment in the Buyer's Shipyard. The industrial means will be provided by the Buyer shipyard as GFS.

4.2 Tests

The list of Acceptance Tests to be performed on the Vessel is described in appendix B of this document.

4.3 Initial Logistic Package

The following initial logistic package elements, intended to be used by the Vessel's crew in charge of operating and performing On-board Level of Maintenance (OLM) tasks will be delivered on-board the Vessel:

- Technical Documentation
- Initial set of on-board spare parts and maintenance consumables
- Mobile outfitting equipment

4.3.1 Technical Documentation

The Vessel's documentation in Spanish language consists of:

- The Vessel's equipment description (Ship book)
- The safety plan, evacuation plan
- The layout diagrams and functional drawings

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For the main equipment items, the documentation in original language consists of:

- Operating manuals
- Drawings and part lists; and
- Maintenance manuals

The documentation will be at suppliers' format and in digital format together with the appropriate viewer software.

4.3.2 On-Board Initial Set of Spare parts, Maintenance Consumables and Mobile Outfitting Equipment

A set of on-board spare parts and maintenance consumables will be delivered on-board the Vessel.

Duration of 6 months of operation, corresponding to 50 days of navigation is taken into account to define this initial set of on-board spares. The definition of the different levels of maintenance is given in appendix D of this Document. The initial sets of on board spare parts will be delivered on-board the Vessel at her delivery to the Buyer.

Safety and mandatory Mobile Outfitting Equipment are already on-board and will be delivered with the Vessel.

4.4 Training for Vessel Operation and On-board Level Maintenance

4.4.1 Training Presentation

Ship Operation training and On-board Level Maintenance Training of the Argentinian Navy crew will be delivered in Toulon (France) to the crew trainees.

In order for the crew trainees to benefit from the Training programme, all trainees shall fulfil the following prerequisites:

- 5 years of ship operation,
- English language

This training will provide the crew trainees with:

- A general knowledge of the Vessel and its subsystems
- The technical know-how required to operate the Vessel and the subsystems safely alongside in harbour and at sea
- The knowledge to perform On-board Level Maintenance (OLM) operations

The Seller will provide the Buyer with a Training Plan at T0 + 6 month. It will describe the schedule and the process adopted for organizing, performing and accepting previously selected training sessions.

A period of 35 working days has been considered to cover the main systems and installations, including the POLARIS® Combat Management System. This training shall cover setting to work, operation in nominal mode, OLM tasks and presentation of the documentation. The main gun training will be performed in Argentina after its delivery.

The training will be carried out by the Seller in the French shipyard before the delivery of the Vessel.

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The maximum number of crew trainees shall be 32.

This training does not include any military operational training.

4.4.2 Trainees Support

During the Vessel Operation and On-Board Level Maintenance Training carried out in France, the Seller will provide the trainees with the following support:

- Transportation from the living area in France to the training location
- Lunch meals during training days

Living costs for the crew during training and tests are not included.

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5 Acceptance Process

5.1 Vessel Acceptance Process

The Seller will provide the Buyer with a Test Plan defining the tests to be performed on the Vessel and with Acceptance Tests Procedures (ATP) that will provide procedures for each individual test performance based on the list annexed in appendix B document of the present SOW.

HAT (Harbour Acceptance Tests) and SAT (Sea Acceptance Tests) will be performed on the Vessel to demonstrate proper functioning of the Vessel with a crew manned by the Seller.

The Buyer representatives shall attend the Vessel's acceptance tests, after which the Final Acceptance Review will be held.

During the FAR, remarks and reservations are subject to the following process:

- If accepted by the Buyer as such: no further action
- If not: an action plan is agreed by both parties

At the completion of the Final Acceptance Review, the acceptance of the Vessel is pronounced by the Buyer.

A Certificate of Acceptance shall be signed by the Buyer and the Seller.

Minor defects shall not prevent the signature of the corresponding Certificate of Acceptance. Such Minor Defects will be listed in the acceptance certificate of the relating set of acceptance and be corrected during the Warranty Period. The Vessel date of Acceptance shall be the date of the last successful test or trial of the corresponding set of acceptance.

Until the Vessel acceptance, on-board consumables are under the responsibility of the Seller.

The Vessel will be delivered to the Buyer in the Seller's premises in France immediately after acceptance.

5.2 30mm main gun acceptance

Acceptance of the 30mm main gun shall be based on the completion of the following:

- The 30mm main gun has been delivered and mounted on-board the Vessel
- The 30mm main gun has been integrated on board and connected to the CMS

No firing test shall be performed.

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5.3 Initial Logistic Package Acceptance Process

5.3.1 Technical documentation process

Technical documentation covering all the main equipment fitted on-board will be delivered by the Seller as follows:

- Two paper copies, one of which being kept on-board the Vessel
- One digital copy of the documentation

Acceptance of this documentation package will be pronounced based on its presentation and delivery.

5.3.2 On-board spare parts and maintenance consumables

The set of on-board spares and on-board maintenance consumables will be delivered in compliance with § 4.3.2.

Acceptance of this spare parts package shall be based on its inventory as listed in the Contract.

5.4 Training acceptance process

Training of the Buyer crew will be delivered in compliance with § 4.4 above.

Acceptance of the training shall be based on the completion of the following:

- The Training Plan has been delivered
- The sessions scheduled in the Training Plan have been performed

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6 Delivery

6.1 Delivery of the OPV L'Adroit

The delivery occurs after the acceptance of the Vessel in the Seller's shipyard.

The flag transfer and the transfer of title will occur at the acceptance of the Vessel by the Buyer.

The maintenance consumables (fuel, lubricants...) and the harbour safety of the OPV L'Adroit after OPV's acceptance are excluded from the present scope of supplies.

After flag transfer, the transit of the ship from France to Argentina is performed by a qualified Argentinian crew under the responsibility of the Buyer.

The Buyer shall be responsible to obtain a navigation authorization under Argentinian flag for the OPV L'Adroit no later than 2 months before delivery.

6.2 Delivery of the 30mm main gun

The main gun will be delivered as per Master Schedule in Argentina under DAP incoterm.

6.3 Delivery of the technical documentation

The Technical Documentation shall be delivered with the OPV L'Adroit.

6.4 Delivery of the on-board Spare Parts and Mobile Outfitting Equipment

On-board spare parts and mobile outfitting equipment will be delivered with the OPV L'Adroit.

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7 Exclusions

The Contract does not include:

- Any modification to the OPV L'Adroit design other than those described in [R1].
- Supply and maintenance of any GFX (see appendix A)
- Integration studies and installation for specific Communication GFE (see appendix A).
- Performance of maintenance tasks on board the Vessel after her delivery to the Buyer
- Any additional crew training other than training described in the current document
- Additional tests required by the Buyer
- Military and operational training of the Buyer 's crew
- All ammunitions
- All firing tests
- Base/depot spare parts and maintenance training
- Travel and accommodation costs from and to Argentina/Seller's premises in France for the Buyer representatives, CMT and crew.
- BUREAU VERITAS surveys for keeping the classification of the Vessel after her delivery.



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8 Warranty

The OPV L'Adroit is covered by a six-month warranty to be performed in the Buyer's premises in the Argentinian Naval Base in accordance with the Terms & Conditions of the Contract.

Warranty doesn't cover malfunctions or damages arising from misuse by the Buyer or default of maintenance.

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Appendices

A. Buyer Furnished Equipment, Information and Services

For the delivery of the OPV L'Adroit, the Buyer will provide the Seller with GFE, GFI and GFS.

A.1 Buyer Furnished Equipment (GFE)

The Seller takes into account the installation on-board of the GFE listed in the present paragraph.

For the delivery of the Vessel, the GFE is the following:

- Helicopter and its support equipment
- Small arms
- All ammunitions
- Small medical equipment and medicine
- Paper charts (charts for sea tests in France will be provided by the Seller)
- 2x Cartography in standard format (S57) for Combat System and Navigation System (cartography for sea tests in France will be provided by the Seller)
- Personal computers, printers, scanners, mail server system
- Satellite TV antenna and equipment
- All flags to be furnished before delivery (the Vessel will be fitted by the Seller with all the regulatory international navigation flags).
- All mobile outfitting equipment not foreseen for safety regulations or mandatory aspects

For each GFE, the Buyer shall provide at T0, the GFE reference and information defining its configuration.

For equipment to be fitted on-board the Vessel in France, the Buyer shall organize and bear costs for GFE delivery to the Seller's premises under DAP Incoterm. During on-board integration and tests, a GFE suppliers' technical assistance can be required by the Seller.

When relevant, each GFE equipment item shall be provided with its installation kit (including connectors, mating connectors, specific cables and special tools).

The Seller shall not be responsible for GFE level of performance.

A.2 Communication Buyer Furnished Equipment (Com GFE)

Communication GFE has not been defined at this stage.

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- Integration of Communication GFE has therefore not been taken into account in the present Contract. Such integration could be proposed as an option when such GFE will be defined by the Buyer. The following Com GFE could be considered:
 - 2x Military VHF radios (if required)
 - Voice crypto, Data crypto, IP crypto, Tactical Data Link crypto (if required)
 - Civilian Satcom (if required)
 - Operational Message Handling System (if required)

A.3 Buyer Furnished Information (GFI)

For this future integration of Communication GFE, the Buyer shall provide the Seller with GFI. GFI will consist in:

- The Installation Guide Documents (IGD): IGD shall contain all information requested for physical integration studies:
 - Components
 - Dimensions
 - Space requirements
 - Weight
 - Power supply
 - Cooling
 - Fluid needs, connection diagram and cables list
 - EME data
 - Interfaces
 - Any specific integration constraints.
- The Interface Control Documents (ICD): ICD shall contain all information requested for functional integration studies:
 - Data exchange
 - Dynamic of data exchange

GFI shall be provided to the Seller with sufficient notice to be able to receive the adequate temporary import certificates from the French Authorities. The Buyer shall provide the relevant End-User Certificates in a timely manner.

A.4 Buyer Furnished Services (GFS)

The Buyer shall provide subscription for Inmarsat and TVSAT tests activities.

The Buyer shall obtain a navigation authorisation under Argentinian Flag at least two months before Delivery of the Argentinian OPV.

The Buyer will provide diesel fuel and others consumables necessary at the end of the acceptance tests and for the transit to Argentina.

In Argentina, the Buyer shall make available the Vessel in its shipyard and the necessary tools and services to install and test the 30mm gun.



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B. OPV L'Adroit Acceptance Tests

Test type	Harbour/Sea
Platform	
Maximum speed	Sea
Compartment inspection	Harbour
Combat System	
Surveillance radar function check	Sea
IFF transponder function check	Harbour
Thermal Imaging System function check	Sea
30 mm gun check (without firing)	Harbour
Heavy Machine Guns check (without firing)	Harbour
On board transmission control check	Harbour
Combat Management System	
Combat Management System function check	Harbour
Communication system	
Communication Management System function check	Harbour
Internal communication function check	Harbour
Radio communication function check	Harbour/Sea

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c. Contractual Documentation Requirement List (CDRL)

Contractual Documentation to be delivered by the Seller to the Buyer:

Description	Schedule
Master schedule	T0+1 month
Harbour and Sea Acceptance Test report	Minute: end of test Report: end of test + 1 week
Vessel Acceptance File	Vessel's acceptance review
Vessel's documentation	Vessel's acceptance review
Training Plan	T0+6 months

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D. Levels of Maintenance

Maintenance level	US MIL-STD 1388 maintenance level code	Location	Human resources	Maintenance tasks typical examples (not exhaustive list)
OLM	C, O	On board	Crew	•Basic preventive maintenance •Line Replaceable Unit (LRU) exchange •Reconfiguration •Functional Testing
ILM	F, H, G	On board and ashore (Naval Base)	Crew and Naval Base maintainers	•Preventive and corrective maintenance •Calibration, adjustment •Minor Overhaul...
DLM	D	Shipyard/dockyard	Shipyard/Dockyard maintainers	•Overhauls, refitting. •Repair •Calibration. •Partial reconditioning
MLM	L	Manufacturer responsibility	Manufacturer specialized maintainers	•LRU repair, complex repair •Full reconditioning •Retrofits •Major Conversion

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E. Acronyms**A**

ARA	Armada de la República Argentina
ATP	Acceptance Test Procedure
ATR	Acceptance Test Report

C

CDRL	Contractual Documentation Requirement List
CMS	Combat management System

E

EDC	Effective Date of Contract
-----	----------------------------

F

FAR	Final Acceptance Review
-----	-------------------------

G

GFE	Government Furnished Equipment
GFI	Government Furnished Information
GFS	Government Furnished Services
GFX	either GFE, GFI or GFS

H

HAT	Harbour Acceptance Test
-----	-------------------------

I

ICD	Interface Control Document
IFF	Identification, Friend or Foe
IGD	Installation Guide Document
ILM	Intermediate Level of Maintenance
ILP	Initial Logistic Package

O

OEM	Original Equipment Manufacturer
OLM	On-board Level Maintenance
OPV	Offshore Patrol Vessel

P

POC	Point Of Contact
-----	------------------

S

SAT	Sea Acceptance Test
SoW	Statement of Work

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Anexo C 3 OPV 87 for the Armada Argentina



Initial Logistic Support



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1 Scope of the Document

This document is the Anexo C to the Contract for the provision of three OPV to the Armada Argentina and provides the description of the Initial Logistic Support (ILS) that will be delivered:

- Technical Documentation;
- Initial set of on-board spare parts and maintenance consumables
- Mobile equipment.



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2 Technical Documentation

The ship documentation will include:

- The Ship and equipment description (Ship handbook) (digital format)
- The safety and evacuation plans (paper and digital formats)
- The main plans of the Ship (paper and digital formats)

The main plans of the Ship will include:

- Hull general scantling drawings
- General Arrangement drawings
- Damage Control drawings
- Topside
- Fluids system diagrams
- Electrical diagrams
- Docking drawings
- Arrangement of the propulsion compartment
- Layout of the Bridge and Machinery Control Room
- Book of stability drawing
- User guide for the ship

In the frame of the Basic Design phase, the following plans will be submitted for approval to the CI:

- General Arrangement drawings
- Topside
- Arrangement of the propulsion compartment
- Layout of the Bridge and Machinery Control Room

The equipment documentation will be delivered by the suppliers and will include:

- Operating manual
- Drawings and part list
- Maintenance manual

The equipment documentation will be at suppliers digital formats supplied with the appropriate viewer.

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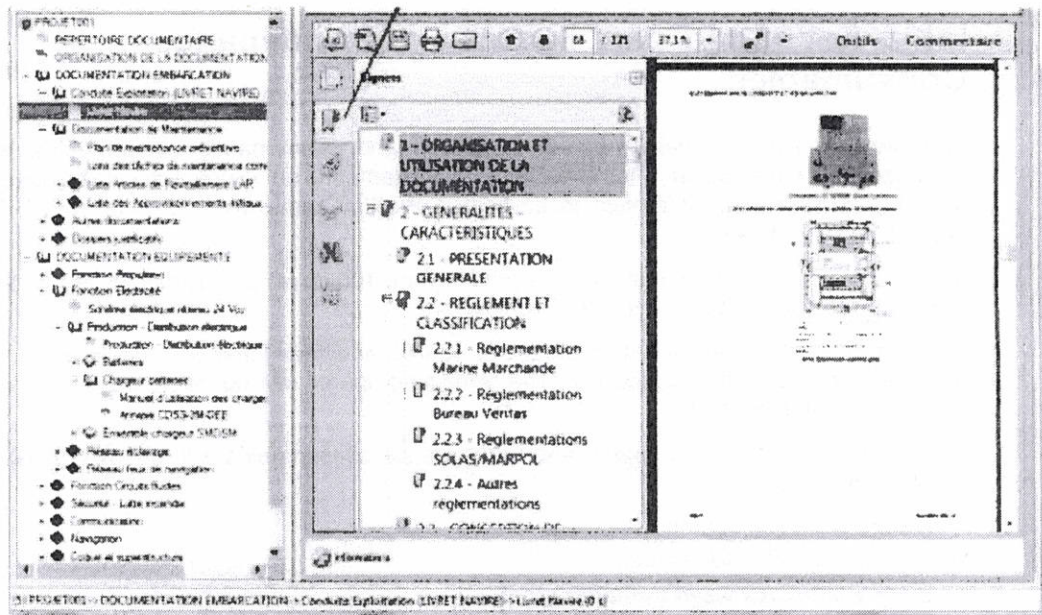


Figure 1. Example of Ship Handbook (Non Contractual)

A Computerised Maintenance Management System (CMMS) will be installed on-board with the main following functions:

- Scheduling tasks
- Work orders
- Recording history
- Spares inventory



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3 Initial Set of on-Board Spares and Maintenance Consumables

The detailed list of initial on-board of spares and maintenance consumables will be discussed with the Buyer after the Contract implementation. Such list will be discussed during a provisioning conference to be held in the timeframe from T0+3 up to T0+6, and agreed with the Buyer.

As an assumption, 24 months of operation (with 100 days of navigation per year, first condition reached) is taken into account.

At least 90% of the initial set of on board spares and maintenance consumables will be delivered on board at ship delivery. The remaining spares will be delivered 6 months after ship delivery at the latest.

The initial set of on board spares and maintenance consumables will mainly consist in the following packages:

- Electro technical spares
- Electric switchboards spares
- Black water/Grey water systems spares
- Breathable air compressor spares
- Avia lights spares
- Converters spares
- Steering Gear spares
- Hydraulic units spares
- Hydraulic system activation of RHIB spares
- Osmosis Plant spares
- Air cooling spares
- Food refrigeration spares
- Air Conditioning Units spares
- Main Diesel engines spares
- Diesel Generators spares
- Diesel oil consumables
- Medium pressure air spares
- Bilge water separator spares
- Pneumatic bilge pump spares
- Elements of shaft lines oil consumables
- Internal/External communication spares
- POLARIS spares
- Networks/telephone spares
- Scanner radar 6002 spares
- Machine guns 12.7 m spares
- 30 mm Main Gun spares
- Navigation system spares
- Active stabilization system spares

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Equipment Logistic Support:

The Seller will provide the Buyer with spare-buying possibility and logistic support during the same period as the one offered by the OEMs to the Seller. This period shall not exceed five (5) years from the Delivery of OPV 3, expect for the following master equipment:

Main diesel engines from ABC: 25 years;

Diesel generators from VOLVO: 10 years after stopping the production.

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4 Initial on-Board Mobile Equipment

The detailed list of initial on-board Mobile Equipment will be discussed with the Buyer after the Contract implementation. The list will be discussed during provisioning conferences from T0+3 until T0+6, and agreed with the Buyer.

At least 90% of the initial on-board Mobile Equipment will be delivered on board at ship delivery. The remaining on-board Mobile Equipment will be delivered 6 months after ship delivery at the latest.

The list of Mobile Equipment will be delivered according to applicable regulations and consist of the following:

- Kits for Electricity
- Kits for Manoeuvring
- Kits for Navigation
- Kits for Safety
- Kits for Machinery
- Kits for Life on board
- Kits for Common tools
- Kits for Medical
- Kits for Catering

Some Mobile Equipment items are also mentioned in the Technical Description and may be redundant in the Mobile equipment list, in such case; quantities to be delivered will be delivered those defined in the Technical Description only.



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A. Acronyms

C

CMMS Computerised Maintenance
 Management System

I

ILS Initial Logistic Support

R

RHIB Rigid-Hull Inflatable Boat

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Anexo C2: Initial Logistic Support (complement)

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1 Makers List of the OPV L'Adroit

The following list gives an indication of the manufacturers of equipment proposed for the OPV L'Adroit which is intended to be similar to the OPV 87 one. Equipment of equivalent performances can also be installed.

	OPV 87 (Reminder of Anexo A1)	OPV L'Adroit
Diesel engines	ABC	ABC
Gear boxes	REINTJES, SCANA VOLDA	REINTJES
Propeller	SCHOTTEL	SCHOTTEL
Cables	NEXANS	NEXANS
Main Diesel Generators	VOLVO PENTA	VOLVO PENTA
Emergency Diesel Generator	VOLVO PENTA	VOLVO PENTA
Emergency power Batteries, associated chargers	BARILLEC, ENAG	BARILLEC, ENAG
Diesel generator Silencer exhaust	VOLVO PENTA	VOLVO PENTA
Main and secondary switchboards, transformers	BARILLEC (Electric installation subcontractor), SCHNEIDER ELECTRIC	BARILLEC (Electric installation subcontractor), SCHNEIDER ELECTRIC
Switchboard, transformers and distribution cabinets	BARILLEC (Electric installation subcontractor), SCHNEIDER ELECTRIC	BARILLEC (Electric installation subcontractor), SCHNEIDER ELECTRIC
Combat Management System POLARIS®, Tactical Data link NIDL ®	NAVAL GROUP	NAVAL GROUP
30 mm Main Gun	LEONARDO	LEONARDO
12.7 mm Small Calibre Gun	REUTECH, FN Herstal (remote controlled)	FN Herstal (manual)
Navigation, security, Com consoles, chart table...	BARILLEC	BARILLEC
VHF ICAO	TELERAD or ROHDE&SCHWARZ	THALES or TELERAD or ROHDE&SCHWARZ
VHF IMM & RHIB	KENWOOD via THEMYS	KENWOOD via THEMYS
HF	HAGENUK	THALES or HAGENUK

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	OPV 87 (Reminder of Anexo A1)	OPV L'Adroit
UHF NiDL ®	THALES or ROHDE&SCHWARZ	THALES or ROHDE&SCHWARZ
UHF	THALES or TELERAD or ROHDE&SCHWARZ	THALES or TELERAD or ROHDE&SCHWARZ
IFF Transponder	THALES, AIRBUS	THALES or AIRBUS
Goniometer – Direction finder	SAILOR	SAILOR
INMARSAT BGAN system	SAILOR via THEMYS	SAILOR via THEMYS
Air Climatic Units	PAUMIER, TELEMECANIQUE, SOCOMEC, BOCK, ROTOR, AZCUE, BITZER	PAUMIER,
Firefighting pumps	AZCUE GARBARINO, DESMI	GARBARINO
Bilge pump	AZCUE GARBARINO, DESMI	GARBARINO,
Ballast pump	AZCUE GARBARINO, DESMI	GARBARINO,
Osmosis units	SLCE	SLCE
Freshwater distribution unit	AZCUE GARBARINO, DESMI	AZCUE
Fuel oil separator filter	RELLUMIX RACCOR	RELLUMIX
Fuel oil pump	AZCUE GARBARINO, DESMI	GARBARINO,
Lubricating oil pump	AZCUE GARBARINO, DESMI	GARBARINO,
Air MP compressor	ERVOR HATLAPA, BAUER, SAUER	ERVOR
Breathable air HP compressor	BCH, ERVOR, BAUER	Compair/Luchard
NOVEC extinction system	TYCO PROTECTION INCENDIE de CORNOUAILLE	TYCO
Inertial Navigation Unit	SAFRAN or IXBLUE	SAFRAN
Echo sounder	ELAC	ELAC

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CONTRAALMIRANTE
DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

	OPV 87 (Reminder of Anexo A1)	OPV L'Adroit
Steering gear	BOPP	BOPP
Steering gear hydraulic unit	BOPP	BOPP
Rudder blade, stock	BOPP Shipyard	BOPP Shipyard
Active stabilization	QANTUM	
Passive stabilization		FLUME
Capstan	BOPP	BOPP
RHIB launching/recovering system	BOPP	BOPP
RHIB	ZODIAC (2 x ZH935)	ZODIAC (ZH935 + ZH780)
Lifeboat	VIKING	VIKING
Rescue boat davit	VIKING	VIKING
JA1 transfer filtration distribution system	RELLUMIX	RELLUMIX
Oily water separator	FACET RWO	FACET
Fuel centrifugal separator	ALFA LAVAL	ALFA LAVAL
Waste water treatment system	EVAC	EVAC
Waste water system: miscellaneous	EVAC	EVAC
Cold room	PAUMIER	PAUMIER
Helicopter handling system	INDAL TECHNOLOGIES, MOTOTOK	


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 CONTRAALMIRANTE
DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

2 OPV L'Adroit on board spares

The following spares are already on board OPV L'Adroit operated by the French Navy and will be delivered with the vessel.

Notice that this existent package covers much more than 6 months of operation and 50 days at sea.

Designation	Quantity *
PLATFORM	
PROCESS CONTROL SYSTEMS	
Power supply 00360636 RE 707520/091-032-02 OUTPUT 4-20 mA/2-10 V INPUT 4-20 mA	1
Electrotechnical	
TeSys contactor LC1D 4P AC1 440 V 25 A coil 230 V AC	1
Load sharing unit LSU113DG	1
TeSys Motor thermal protection relay 4 to 6 A class 10 A	1
Tesys reversing contactor LC2D 3P AC3 440 V 9 A coil 24 V AC	1
Tesys contactor LC1D 4P (2F plus 2O) AC1 440 V 25 A coil 24 V DC	1
TeSys Motor thermal protection relay 1 to 1.7 A class 10 A	1
White luminous switch	2
Water bath resistance 750 W	1
Electric switchboards	
FINDER CURRENT RELAYS	1
Synchroniser - Measurement voltage on Main switchboard 440/100 V - Power voltage 24 V DC - option A 60 Hz frequency control	1
Primary-switched 24 V DC / 10 A power supply for DIN top-hat rail mounting, single phase	1
Phase sequence relay - Measured voltage 440 V	1
Minimum voltage trip MN 200 to 250 V DC and AC 50 and 60 Hz	1
Instantaneous contactor CA2K 4 F plus 0 O 10 A 220 to 230 V AC	1
Tesys instantaneous contactor CAD32 3 F plus 2 O 10 A 24 V AC	1
Tesys instantaneous contactor CAD32 3 F plus 2 O 10 A 24 V DC	1

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Tesys instantaneous contactor CAD32 3 F plus 2 O 10 A 230 V AC	1
Tesys instantaneous contactor CAD32 3 F plus 2 O 10 A 440 V AC	1
Tesys instantaneous contactor CAD50 5 F plus 0 O 10 A 24 V DC	1
Tesys instantaneous contactor CAD50 5 F plus 0 O 10 A 230 V AC	1
Tesys instantaneous contactor CAD50 5 F plus 0 O 10 A 440 V AC	1
Motor circuit breaker GV2ME 20 to 25 A 3P 3d thermal-magnetic trip	1
Auxiliary contact 1 F plus 1 O (default)	1
Auxiliary contact 1 O plus 1 F (default)	1
Auxiliary contact 2 F	1
Tesys contactor LC1D 4P (2F plus 2O) AC1 440 V 20 A coil 230 V AC	1
Tesys contactor LC1D 3P AC3 440 V 9 A coil 230 V AC	1
Tesys contactor LC1D 4P (2F plus 2O) AC1 440 V 25 A coil 230 V AC	1
Tesys contactor LC1D 3P AC3 440 V 12 A coil 230 V AC	1
Tesys contactor LC1D 3P AC3 440 V 18 A coil 440 V AC	1
Tesys contactor LC1D 4P (2F plus 2O) AC1 440 V 40 A coil 230 V AC	1
Tesys contactor LC1D 3P AC3 440 V 25 A coil 24 V AC	1
Tesys contactor LC1D 3P AC3 440 V 38 A coil 24 V AC	1
Tesys contactor LC1D 3P AC3 440 V 80 A coil 24 V AC	1
Tesys contactor LC1F 3P AC3 440 V 185 A coil 440 V AC	1
Tesys contactor LC1F 3P AC3 440 V 265 A coil 220 V AC	1
Tesys reversing contactor LC2D 3P AC3 440 V 38 A coil 24 V AC	1
Tesys reversing contactor LC2K 3P AC3 440 V 6 A coil 24 V AC	1
TeSys Motor thermal protection relay 16 to 24 A class 10 A	1
TeSys Motor thermal protection relay 63 to 80 A class 10 A	1
TeSys Motor thermal protection relay 30 to 38 A class 10 A	1
COIL MN 220-240 V 50/60 HZ 208-277 V 60 HZ CIRCUIT BREAKER ACCESSORY NSX100-630	1
FAN OUT 3P SEP PHASES CIRCUIT BREAKER ACCESSORY NSX100-250/INS100-250	1
Instantaneous relay 24 V DC 4OF	1

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MINIATURE RELAY 3 CO WITH LED 24 V DC box of 10	20
MINIATURE RELAY 4 CO WITH LED 24 V AC	4
MINIATURE RELAY 4 CO WITH LED 24 V DC	5
Voltage transformer TP108/1 - 440/100 V - 30 VA - CL1 - 60 Hz	1
Transformer 440 V/230 V 400 VA 60 Hz	1
Primary-switched 24V DC / 20 A power supply for DIN top-hat rail mounting, single phase	1
PLC interface including PLC-BSC base../21 with screw-on connection and slot-in miniature relay with power contact, mounted on NS 35/7.5 profile, 2 inverters, input voltage 24 V DC	1
HIGH POWER SUPPLY 24 A 48 V DC	1
BACKPLANE EXTENDER KIT (2 x BMXXBE1000 boards + 1 cable BMXXBC008K + TLYEX)	1
Fire detection system (8 zones)	1
Addressable optical smoke detector - EX	1
Addressable optical heat detector	1
Addressable optical smoke detector - EX	1
Foghorn - SUPERTYFON AT 150/200 Without TV784	1
Buzzer DIA 22 80 DB	1
Power supply 230 V AC / 24 V DC 40 A	1
2-diode power supply protection module	1
Tesys instantaneous contactor CAD50 5 F plus 0 O 10 A 24 V DC	1
Black water / Grey water system	
H2S sensor	1
Odour filter	1
Capacitive sensor	1
Motorised valve DN50/220 V	1
Level tester	1
Level tester SSP/3K	1
Solenoid valve R1"	1



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Vacuum sensor	1
Pressure gauge R1 HALF INCH BAR 1 INCH	1
Pressure gauge 1b	1
Pressure gauge 0 2.5b	1
Pressure switch ISE40 01 62L 1 EIGHTH INCH	1
Breathable air compressor	
REAVELLITE 'S' oil 1L	4
Admission filter	4
O-ring seal on suction filter	4
Seal kit	1
Mechanical seal	1
Aviation lights	
SHIELD FLIGHT DECK MODULE HI-SERIES	1
HIA27 STOP.GO LIGHT LED LIGHT SOURCE RED / GREEN	1
HIB5 DECK EDGE LIGHT AMBER HCG	1
LED-LIGHT SOURCE AMBER BGLL991-Y	1
LED-LIGHT SOURCE GREEN BGLL-G	1
HIR5 REFERENCE LIGHT LED LIGHT SOURCE AMBER	1
HISM070 SERVICE FLOODLIGHT LIGHT SOURCE: COLOUR A LIGHT: WHITE/GREEN/WHITE	1
Converter	
Fuse 10*38 1A aM box of 10	1
Fuse 1A gG 10*38 box of 10	10
Fuse 250 A AR 660 V	1
AUXILIARY CONTACTOR 24 V AC "POWER ON"	1
Auxiliary contactor 24 V	1
Auxiliary contactor anti flash DC 28 V	1
White network presence indicator	1
Green converter ready indicator	1

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Red converter fault indicator	1
Lamps BA9S-2W 30 V	1
Line contactor 45 KW 80 A 3-phase - Coil 440 V 60 Hz	1
Tetra output contactor 400 Hz - coil 440 V 60 Hz	1
Lateral auxiliary contact	1
SCR Semipack module 90 A 1200 V	1
IGBT module 225 A 1200 V FITTED	1
COND 50 μ F 300 V AC	1
COND 15 μ F 300 V AC	1
COND 350 V DC	1
Resistance 27 Kb 10 W 5%	1
Contact 275 A 3P NO 220 V DC	1
TA 200/0.2 A 16OHMS 54 V	1
Filter	1
Filter	1
Circuit breaker C60N calibre 63 A curve C	1
Tetra circuit breaker C120N C100A MG	1
AUX contact Of MG	1
Monitoring relay 400 Hz	1
STEERING GEAR	
FILTER CARTRIDGE	4
FLEXIBLE COUPLING	2
SOLENOID VALVE	2
Temperature probe	1
Filter	1
Filter cartridge LP HYDAC	1
Pressure limiter	1
GAL ratchet bit	2

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January 2018 | Page 10/31**PÚBLICO****AUTENTICACION**DAVID FABIAN BURDEN
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DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

Hydraulic unit	
Adjustable thermostat	1
Filter	4
Screw-on air filter cartridge	2
Filter R UT 319	4
Filter seal R UT 319	4
Fuse	1
Fuse	1
Light module	1
Light module	1
Light module	1
Relay base	1
Relay 2RT type RAU	1
Contact 3P	1
Thermal relay	1
Phase relay	1
Double luminous push button head	1
Red luminous lamp head	1
Green luminous lamp head	1
Relay base	1
Relay	2
Flush push button head	1
Red flush push button head	1
Green flush push button head	1
Distributor PVG 32/1 SEC CDE Elec	1
Distributor PVG 32/2 SEC CDE Elec	1
Distributor PVG 32/6 SEC CDE Elec	1
Distributor PVG 32/4 SEC CDE Elec	1

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DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

Filter cartridge	2
Hydraulic system Activation of RHIB	
UE CARTRIDGE	2
MOT COUPLING 34 KW	2
OSMOSIS PLANT	
Filter seal F 1"1/4 and 1"1/2	1
O-ring seal 88 49x3 53 NBR 70SH	4
Storage solution	6
HP pump oil (5 litre drum)	3
HP pump oil (1 litre drum)	6
Neutralite (Pot of 15kg)	4
Filler plug seal CAT 14177	24
O-ring seal for valve FAS TA40&60-6	1
O-ring seal 88 27x5 33 NBR70SH	2
Set of tube seals 2"5S	1
Stainless steel sieve for F 1"1/4 and 1"1/2	1
Salinity meter probe (2M)	1
Natilus pressure switch 0.4-4 bar	1
Natilus pressure switch 10-160 bar	1
Pressure gauge LP -1/+5 bar with collar	1
Flat pipe PS 16 bar diam 45	1
Pressure gauge HP 0-100 bar with collar	1
Anti-pulsation bottle 16210S - 36 b	1
TAGELUS sand filter valve	1
Motorised valve 3V-DN20 PVC	1
HP pump kit 1051	1
Pump repair kit BNG4 60 Hz	1
Cartridge 20" - 20 microns	10

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CONTRAALMIRANTE
DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

Manual valve M 1/4" NPT x 06	1
Cartridge 20" - 5 microns	10
S/E SD11 active charcoal	1
Plug size 10 PA	1
Ratchet nut size 10 SERTO PA	1
Toothed belt GT2 640-8MGT-50 HP pump	1
Loading kit CAT HYDAC	1
Active charcoal in-line filter kit	1
G3 adapter for HYDAC loading kit	1
1 litre graduated tray - PMP T11027	1
Storage solution	10
Membrane cleaning kit	3
Filling float M 3/4"	1
Air cooling	
Seawater pump fittings	1
Freshwater pump fittings	1
Cartridge for unit BCY 489S	2
Condenser connection side gasket 299*4	1
Condenser inversion side gasket 299*298	1
Food refrigeration	
Condenser connection side gasket 159*4	1
Condenser inversion side gasket 299*159	1
Dryer cartridge	1
Air Conditioning Units	
Belt	6
Belt	2
Belt	6
Belt	6

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Belt	2
Air conditioner filter ML 500	5
Air conditioner filter ML 300	4
Primary propulsion motors	
Pressure gauge with bourdon spring	1
Seal	48
Watertight ring	3
Round seal	2
Square seal	2
Seal	1
Seal	4
Square seal 20R23-110x110	2
Square seal	8
Precision O-ring seal 90x5B	2
Seal	2
Watertight ring A27x32	4
Seal	5
Seal	12
Precision O-ring seal 60W5B DIN3770	26
Seal	1
Seal	24
Seal	1
Seal	1
Seal	24
Seal	12
Precision O-ring seal 148x10 DIN3770	12
Seal	12
Seal	12

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Rectangular seal	2
Bryce injector and injector carrier	1
Admission valve seat	2
Exhaust valve seat	2
Valve guide	4
Seal	12
Seal	1
Seal	12
Cylinder head safety valve	1
Admission valve	2
Exhaust valve	2
Internal spring	4
External spring	4
Seal	4
Seal	12
Watertight ring	26
Piston	1
Chrome flame stop ring	5
Compression ring	5
Compression ring	5
Oil scraper ring	5
Cylinder head gasket	12
O-ring seal	6
Metallic gasket	20
O-ring seal	36
Banjo connection screw	2
De-aerating plug	2
Watertight ring	2

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CONTRAALMIRANTE
DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

Start-up valve	1
O-ring seal	12
Cover seal	2
Seal	2
Duct injection pipe	3
Quad seal	4
Seal	1
Precision O-ring seal 70x5B	2
Seal	1
O-ring seal thermostatic valve amot	1
O-ring seal	2
O-ring seal	1
Precision O-ring seal 110x5	2
Precision O-ring seal	12
Precision O-ring seal	12
O-ring seal	26
Precision O-ring seal 150x5B	1
O-ring seal	24
O-ring seal	3
O-ring seal	12
O-Ring thermovalve amot water	1
O-ring seal	4
Precision O-ring seal 25x2B viton	48
O-ring seal	24
Precision O-ring seal	12
O-ring seal	1
Precision O-ring seal 122x3B DIN	2
O-ring seal	1

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Precision O-ring seal	12
Precision O-ring seal 11x400	2
O-ring seal	2
start-up valve seal kit	7
rubber sleeve	72
rubber sleeve	48
Dichten deksen TANDW.K. V-MOT	1
Rectangular seal	4
Oval seal	1
Seal	2
Verkante dichting water V-MOT	1
Cover seal: crankshaft free end	2
Round seal	1
Round seal	1
Seal	1
Priming seal	12
Round seal	2
Seal	1
Seal: between discharge curve and lubrication oil pipe	1
Seal: between lubrication oil pipe and adjustment valve	1
square seal 20R12 150x150	1
Square seal	1
Square seal	1
Seal	3
Seal: turbo exhaust neck	4
Seal	1
Shaft radial seal	1
Seal for FLEXMASTER coupling	4

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Metallic gasket 19x13 2x2 on lubrication circuit	25
Seal	4
Watertight ring A16x20	1
Watertight ring	2
Watertight ring A17x21 DIN7603	3
Seal	3
Seal	1
Seal	12
Air coolant funnel seal	2
Round seal diam. 457.2x10	2
Seal	100
Push-spring	5
Hex head screw M16x45	48
Flens "Make&Brake" flange	2
Box 1 kg email-Levis	2
Filter cartridge 50 microns	1
O-ring seal 64.77x2.62	1
Filter cartridge	6
Paper band	8
Precision O-ring seal 170x8B DIN	2
Air filter element M40	24
Set of seals for filter	8
Upper watertight seal	4
Lower watertight seal	4
GO filter	8
Seal	2
O-ring seal	4
O-ring seal	6



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COMANDANTE
DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

O-ring seal	48
Precision O-ring seal	48
Injector (10 holes)	6
Precision O-ring seal	48
Precision O-ring seal	48
Precision O-ring seal	48
Precision O-ring seal	48
Safety valve	2
Cone connection 100R1-3/4"G	1
Reducer nipple 1x1/2"	2
Straight connection Ermeto EL22	2
O-ring seal	1
3-way electromagnetic valve	1
Pressure regulator seal kit	2
Spray nozzle	2
Diesel pre-filter	4
DA TYPE D16C-AMG	
Filter	4
Oil filter	8
Oil filter derivation F2 1	8
GO filter classifiable F2/4	4
Air filter	8
Watertight ring J 128	4
Ring	2
O-RING SEAL J 163	8
O-RING SEAL J 143	4
Ring K 122I	2
BELT	2

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CONTRAALMIRANTE
DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

ALTERNATOR BELT	2
WATER TIGHTNESS RAIL	2
Washer C3 63C	8
SEAL	2
Cylinder head gasket kit	1
Admission seal kit	1
Turbo seal kit	1
Seal K2 2 2 B	8
Ring	6
Injector	1
O-ring seal set K1 22S	6
Washer	6
Exhaust collar	1
DA TYPE D7 MG HE / UCM 274 H	
Gondola filter n4	2
Seal	2
OIL FILTER	1
TURBO SEAL	1
SEAL	2
SEAL C3 64C	2
BELT	1
SEAL	1
SEAL	1
O-RING SEAL	1
O-RING SEAL J1 11	4
EXTRACTOR	1
INJECTOR SEAL	1
TURBO SEAL	1


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DAVID FABIAN BURDEN
 CONTRAALMIRANTE
 DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

SEAL	1
ROCKER ARM COVER SEAL	1
GABARINO pump BT401 single unit BZE without motor	1
Air filter	1
Oil filter TAG 720GE	1
Diesel oil	
Elastic coupling NEUPEX B110	1
Mechanical seal	1
Filter cartridge	4
MP AIR	
Full pouch of seals	1
DRAIN PLUG	1
SLAT KIT	1
Solenoid valve silencer	2
Purge valve for dehumidifier filters	4
Pressure reducing valve P33	2
Maintenance kit CD11	2
Bilge water separator	
Membrane cover seal	1
EBM membrane 14*1	3
Pneumatic bilge pump	
REPAIR KIT	2
REPAIR KIT	1
L.A. oil	
HYDAC filter element	2
GRESEN filter element	4

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CONTRALMIENTE
DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

COMBAT SYSTEM	
COM OPS	
IP Phones	1
SITIP communication terminal	1
AUT communication terminal	1
Set of fuses	1
POLARIS	
24" screen	1
20" screen	1
Power supply	1
IEI board IMB-Q770	1
Quadro 2000 or K2000 card (to be validated) in PCIe 16x	1
NVS300 card or derivative in PCIe 1x built into port PCIe 4x	1
Moxa CP-114 serial card in PCIe 1x	1
additional Intel Ethernet PCI card (2 ports on mother board and 1 port: Total 3 ports)	1
Hard Disk (one per machine according to failed console)	3
Switches	1
Network/TOIP telephony/Messaging:	
Ethernet switch X440 24 POE	1
AE switch licence	1
patch cables	10
set of IPBX cards	31
Fixed IP phones	3
Scatter radar 6002	
External I/O	1
Power Supply Unit	1
Machine guns 12.7 mm	
Tool kit	1



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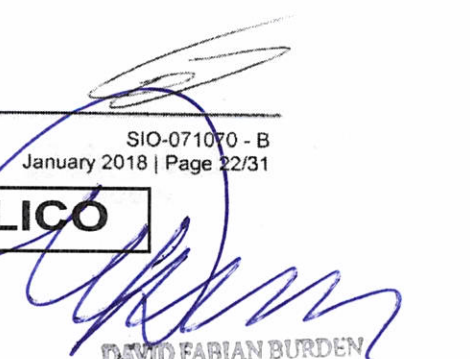
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Lubricant	1
Main gun 30 mm	
To be defined with the supplier	1

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CONTRAALMIRANTE
DIRECTOR GENERAL DEL MATERIAL DE LA ARMADA

3 OPV 87 on board Spares, consumables and specific tools – Tentative List

The initial set of on board spares and maintenance consumables represents 40% of the ILS global package. This package includes the specific tools required for the on board maintenance operations.

The following packages of on board spares are splitted into:

On board Spares Packages	amount % of the whole set	Spares, consumables and specific tools
Electro technical spares	6	
Electric switchboards spares	4	power supply
		dc-dc converter
		ac-dc converter
		x ports ethernet switch
		filter module
		ethernet programmable fieldbus controller
		ethernet fieldbus coupler
		digital input module
		analog input module
		main circuit breaker
		circuit breaker
		insulation monitor
		frequency meter
		ammeter
		voltmeter
		manual starters
		contactors
		fuses
		switches
		lamps
Black water/Grey water systems spares	3	
Breathable air compressor spares	1	
Aviation lights spares	2	

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On board Spares Packages	amount % of the whole set	Spares, consumables and specific tools
Converters spares	1	
Steering Gear spares	2	sensor
		seal
		relay 2 RT
		set of seals
		rudder angle sensor
		filter cartridge
		elastic coupling
		hydraulic distributor
		temperature sensor
		filter
		filter cartridge
Hydraulic units spares	3	
Hydraulic system activation of RHIB spares	3	
Osmosis Plant spares	3	active charcoal filter
		pump repair kit
		salinometer
		gaskets
		filter cartridges
		biocide
		cleaning kit
		test kit and pressure tank
		limestone
Air cooling spares	3	active charcoal
		flow sensor
		temperature sensor
		relay
		contactor
		transformer
		heater
		electric motor
Food refrigeration spares	2	

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On board Spares Packages	amount % of the whole set	Spares, consumables and specific tools
Air Conditioning Units spares	3	filters pressure switches acu regulator water gauge pressure sensor safety valve refrigerant charge package
Main Diesel engines spares	19	Seals and O-rings Insert for centrifugal filter Several seals and joints Air filter cover element Fuel filter cartridge Several seals Luboil filter cartridge Set for centrifugal filter Several seals and joints Nozzle Several seals and joints Spill plug for fuel injection pump Several seal-O-rings several joints - cooler Zinc anode in air cooler luboil cooler maintenance set cooler - Filter + O-ring carter breather Spare conrod bolt and nut Spare fuel injection pump Spare pressostatic sensor Spare thermostatic sensor Spare exhaust thermometer Spare inlet valve Spare exhaust valve Spare valve seat insert for inlet valve


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On board Spares Packages	amount % of the whole set	Spares, consumables and specific tools
		Spare valve seat insert for exhaust valve
		Spare valve guide intake and exhaust
		Spare safety valve
		Spare fuel injection pump
		Spare fuel shielded injection pipe
Diesel Generators spares	8	oil filter
		oil filter
		air filter
		gasoil filter
		gasoil filter cartridge
		zinc anode
		seal
		seal
		seal
		oil filter
		oil filter
		air filter
		gazole filter
		air filter
		gasoil filter
		gasoil filter cartridge
		zinc anode
		seal
		seal
		seal
		turbine
		belt
		oil filter
		oil filter
		air filter
		gasoil filter
		air filter

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On board Spares Packages	amount % of the whole set	Spares, consumables and specific tools
		gasoil filter
		gasoil filter cartridge
		zinc anode
		seal
		seal
		seal
		oil filter
		oil filter
		air filter
		gasoil filter
		air filter
		gasoil filter
		gasoil filter cartridge
		zinc anode
		seal
		seal
		seal
		turbine
		oil filter
		oil filter
		air filter
		gasoil filter
		air filter
		gasoil filter
		gasoil filter cartridge
Diesel oil consumables	2	
Medium pressure air spares	1	
Bilge water & diesel separator spares	2	set of o-rings
		measuring cell
		set of fuses
		zinc anode
		desicator cartridge

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On board Spares Packages	amount % of the whole set	Spares, consumables and specific tools	
Pneumatic bilge pump spares	1		
Elements of shaft lines oil consumables	3		
Internal/External communication spares	2		
POLARIS spares	4		
Networks/telephone spares	2		
Scanter radar 6002 spares	5		
		Air filter, transceiver	
		Air filter, ACU	
		Static dehydrator	
		Cable strap, Ø44 x 4 mm, black	
		Cable strap, Ø20 x 2.5, natural	
		Oil, Gear, Synthetic	
		Toolkit composed of:	
		PZx Key	
Torx Key			
Torque Wrench with extenders			
Allen Key			
Connectors			
Machine guns 12.7 m spares	1	Boresight System	
		Cover Protective / Rain	
		Lubricant	
		Protective lubricant	
30 mm Main Gun spares	5		

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On board Spares Packages	amount % of the whole set	Spares, consumables and specific tools
		Gasket filter
		Gauge cartridge
		Heat exchanger filter
		Cartridges
		Consumables composed of:
		Duster Aerosol Dust Removal System
		Clean rags
		Cleaning Solvent
		Electro contact cleaner
		Grease
		Hydraulic oil
		Lubricant Spray
		Lubricating oil
		Oil
		Tectyl
		Tools composed of
		Wrenches
		Adapters
		funnels
		Oilers
		Allen Keys
		Gauges
		Locking pin and pin remover
		Tester
		Dummy cartridges
		Round remover tools
		Locking tools
		Fuse testing tools
		Torque spanner with adapters

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On board Spares Packages	amount % of the whole set	Spares, consumables and specific tools	
			Vernier Calliper
			Greaser
			Tool for nitrogen Refilling
Navigation system spares	2		
Active stabilization system spares	2		flexibles hoses
			hydraulic distributor
			hydraulic valves
			rings and seals
			cylinder
			computer unit
Other systems - various	5		
TOTAL	100		



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Anexo D 4 OPV for the Armada Argentina



General Schedules and Stages of Construction



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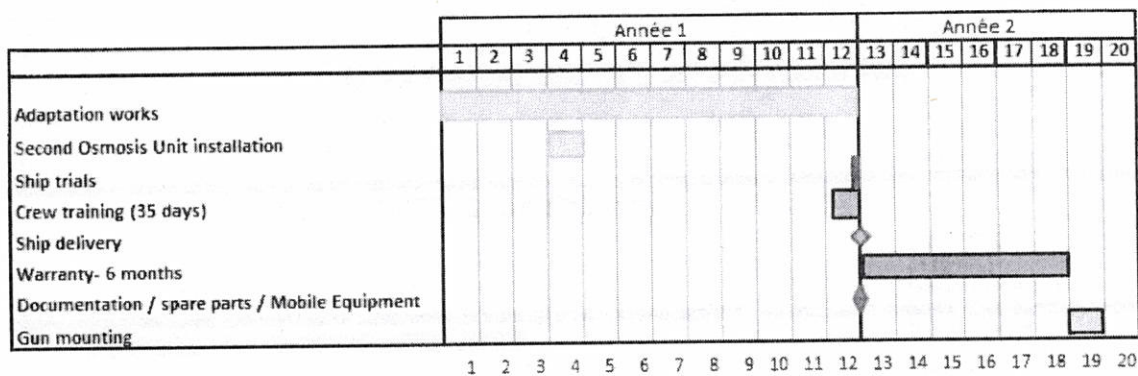
ARMADA ARGENTINA

4 OPV PARA ARA

General Schedules & Stages of Construction

1 Master Schedule of the OPV L'Adroit

Master schedule and main milestones are as follows. Dates are indicated in T0 + x months.



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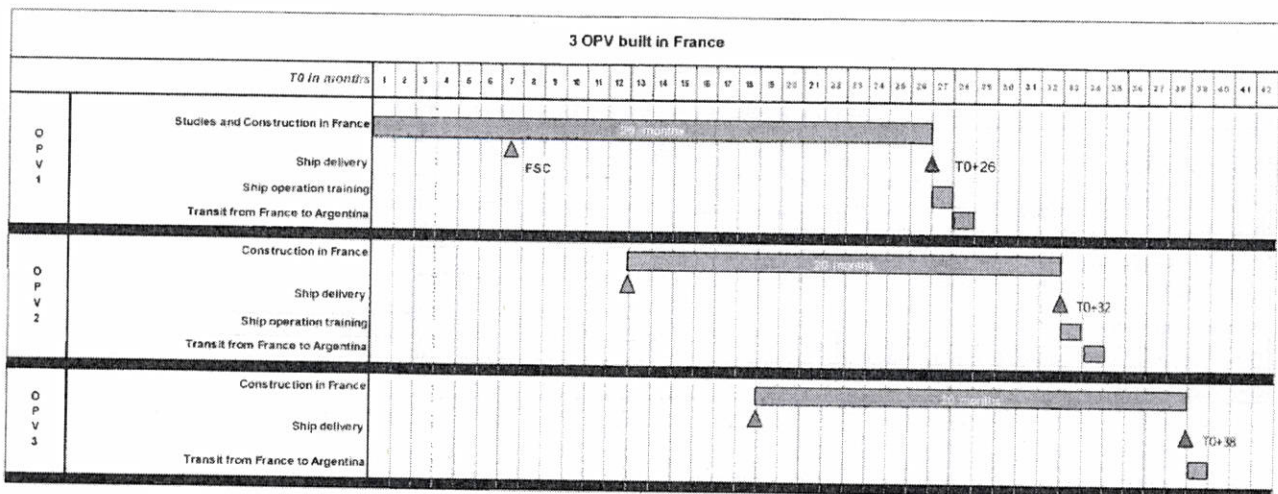
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2 Master Schedule of the OPV 87

Master schedule and main milestones are as follows. Dates are indicated in T0 + x months.



3 Work Progress Certification Events of the OPV 87

The milestones related to payments as per Article 4 of the Contract are defined hereafter. Relevant milestones completion definitions will be exactly those used to certify the achievement of the milestone.



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Milestone set up in Article 4 of the CONTRACT	Milestone completion definition	Production process leading to milestone
CUOTA n° 1: Construcción de la parte delantera del buque	Milestone is completed when assembly of the first 5 Tons of first hull block is achieved	<p>The industrial stage consists in the following steps:</p> <ul style="list-style-type: none"> - Study of the basic design that includes the general structure of the ship - Delivery of general drawings in regards with the contractual obligations - Development and validation of industrial plans to prepare the construction of the ship - Selection of various providers - Notification of the contracts towards the main providers - Initialization of the procurement of main equipment - Initialization of the procurement of raw materials - Delivery of first batch of steel sheets, - Nesting of steel sheets for first hull block - Cutting of steel sheets for first hull block - Preparation of work of first hull block - Welding of the steel sheets for the first 5 Tons of first hull block
CUOTA n°2: Instalación de la primera parte de la quilla	Milestone is completed when assembly of the ship has commenced comprising at least 50 tonnes or 1% of the estimated mass of the hull whichever is less	<ul style="list-style-type: none"> - Continuation of production of first hull block - Delivery of steel sheets for second hull block - Nesting of steel sheets for second hull block - Cutting of steel sheets for second hull block - Preparation of work for second hull block - Welding of the steel sheets for the second hull block
CUOTA n° 3: Construcción y unión de la parte central del casco	Milestone is completed when construction and junction of hull blocks 5 with 6 is achieved	<ul style="list-style-type: none"> - Continuation and finalization of production of first and second hull blocks - Delivery of steel sheets for hull block 5 and 6 - Nesting of steel sheets for hull block 5 and 6 - Cutting of steel sheets for hull blocks 5 and 6 - Preparation of work of hull blocks 5 and 6 - Welding of the steel sheets for the hull blocks 5 and 6 - Finalization of hull blocks 5 and 6



ARMADA ARGENTINA

4 OPV PARA ARA

General Schedules & Stages of Construction

Milestone set up in Article 4 of the CONTRACT	Milestone completion definition	Production process leading to milestone
CUOTA n°4: Instalación de los motores de propulsión del OPV	Milestone is completed when main engines are embarked and laid down on hull block 4	<ul style="list-style-type: none">- Delivery of steel sheets for hull blocks 4 and 9- Nesting of steel sheets for hull blocks 4 and 9- Cutting of steel sheets for hull blocks 4 and 9- Preparation of work for hull blocks 4 and 9- Welding of the steel sheets for the lower part of the hull block 4- Welding of the steel sheets for the hull block 9- Finalization and Assembly of hull block 9- Assembly of the lower part of the hull block 4- Delivery and installation of main engines
CUOTA n° 5: Botadura del OPV	Milestone is completed when the ship is afloat	<ul style="list-style-type: none">- Continuation and finalization of production of hull block 4- Delivery of steel sheets for hull blocks 1, 2, 3- Nesting of steel sheets for hull blocks 1, 2, 3- Cutting of steel sheets for hull blocks 1, 2, 3- Preparation of work for hull blocks 1, 2, 3- Welding of the steel sheets for hull blocks 1, 2, 3- Assembly of hull blocks 1, 2, 3- Finalization of production of hull blocks 1, 2, 3- End of junction of all blocks from 1 to 9 and setting afloat
CUOTA n°6: Entrega del OPV	Milestone is completed when: <ul style="list-style-type: none">- Tests listed in the Anexo F are achieved- Inspection of compartments are achieved- BUREAU VERITAS classification certificates are delivered- Declaration of Conformity by the Seller is delivered	<ul style="list-style-type: none">- Delivery of steel sheets for hull blocks 21, 22- Nesting of steel sheets for hull blocks 21, 22- Cutting of steel sheets for hull blocks 21, 22- Preparation of work for hull blocks 21, 22- Continuation and finalization of production of hull blocks 21, 22- Delivery of Mast (block 31) and mounting- End of outfitting, cabling and connecting- Industrial Tests and integration of Equipment achieved- Harbour acceptance tests- Sea acceptance tests

NB: The production process above is given for information. It could be modified depending of the exact date of T0 to take into account production constraints at that moment. Definitive production process will be confirmed to the Customer during the first progress meeting.

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4 Schedule of payments

OPV	CUOTA	EVENTO	T0+	PRECIO (€)	% CONTRATO
		PAGO ANTICIPADO	0	57 520 000,00	20,0%
L'Adroit	CUOTA 1	Instalación de la segunda unidad de osmosis inversa	4(*)	12 000 000,00	4,2%
OPV 87 N°1	CUOTA 1	Construcción de la parte delantera del buque según Anexo D – Capítulo 3	7(*)	21 466 666,67	7,5%
OPV 87 N°1	CUOTA 2	Instalación de la primera parte de la quilla según Anexo D – Capítulo 3	10(*)	17 173 333,33	6,0%
L'Adroit	CUOTA 2	Entrega del OPV L'Adroit	12(*)	12 000 000,00	4,2%
OPV 87 N°2	CUOTA 1	Construcción de la parte delantera del buque según Anexo D – Capítulo 3	13(*)	21 466 666,67	7,5%
OPV 87 N°1	CUOTA 3	Construcción y unión de la parte central del casco según Anexo D – Capítulo 3	15(*)	12 880 000,00	4,5%
OPV 87 N°2	CUOTA 2	Instalación de la primera parte de la quilla según Anexo D – Capítulo 3	16(*)	17 173 333,33	6,0%
OPV 87 N°1	CUOTA 4	Instalación de los motores de propulsión del OPV según Anexo D – Capítulo 3	18(*)	8 586 666,67	3,0%
OPV 87 N°3	CUOTA 1	Construcción de la parte delantera del buque según Anexo D – Capítulo 3	19(*)	21 466 666,67	7,5%
OPV 87 N°2	CUOTA 3	Construcción y unión de la parte central del casco según Anexo D – Capítulo 3	21(*)	12 880 000,00	4,5%
OPV 87 N°1	CUOTA 5	Botadura del OPV según Anexo D – Capítulo 3	22(*)	4 293 333,33	1,5%
OPV 87 N°3	CUOTA 2	Instalación de la primera parte de la quilla según Anexo D – Capítulo 3	22(*)	17 173 333,33	6,0%
OPV 87 N°2	CUOTA 4	Instalación de los motores de propulsión del OPV según Anexo D – Capítulo 3	24(*)	8 586 666,67	3,0%
OPV 87 N°1	CUOTA 6	Entrega del OPV según Anexo D – Capítulo 3	26	4 293 333,33	1,5%
OPV 87 N°3	CUOTA 3	Construcción y unión de la parte central del casco según Anexo D – Capítulo 3	27(*)	12 880 000,00	4,5%
OPV 87 N°2	CUOTA 5	Botadura del OPV según Anexo D – Capítulo 3	28(*)	4 293 333,33	1,5%
OPV 87 N°3	CUOTA 4	Instalación de los motores de propulsión del OPV según Anexo D – Capítulo 3	30(*)	8 586 666,67	3,0%



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OPV 87 N°2	CUOTA 6	Entrega del OPV según Anexo D – Capítulo 3	32	4 293 333,33	1,5%
OPV 87 N°3	CUOTA 5	Botadura del OPV según Anexo D – Capítulo 3	34(*)	4 293 333,33	1,5%
OPV 87 N°3	CUOTA 6	Entrega del OPV según Anexo D – Capítulo 3	38	4 293 333,33	1,5%
TOTALES:				287 600 000,00	100%

(*) Indicative date of intermediate milestones

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Anexo E 3 OPV 87 for the Armada Argentina



Training Programme



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PÚBLICO

1 Introduction

1.1 Scope of the Document

This document is the Anexo E to the Contract for the provision of three OPV to the Armada Argentina and provides the description of the Training courses to be provided to:

- The crews of OPV 1 and OPV 2 (Ship operation and OLM training);
- The ARA's maintainers (DLM training).

1.2 Designations & Definitions

The following designations and definitions are applicable:

Table 1. Designations and Definitions

Term	Definition
OLM	On board Level Maintenance (first level of maintenance) Basic preventive maintenance by the Crew. Line Replaceable Unit (LRU) exchange (use of on board spares parts)
DLM	Depot Level Maintenance Preventive and corrective maintenances, repair, partial reconditioning

1.3 Support of Crew Members and Maintainers during Training

The living costs (accommodation, meals, insurance, transport, offices spaces) for the crews and the maintainers are not included in the Contract.

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2 Ship Operation Training (OPV 1 and OPV 2)

Training session will take place in France.

In order for the trainees to benefit from the Training program, all trainees shall fulfil the following prerequisites:

- 5 years of ship operation,
- A sufficient knowledge in reading and speaking English.

This training will provide the crews with the technical know-how required to operate the ship and the subsystems safely alongside and at sea.

The content of the Operations Training will be provided by the Contractor to the Buyer in the Training Plan at T0+12. This Plan will describe the schedule and the process to perform the training sessions.

This training will take place in the French shipyard after the delivery of OPV 1 and OPV 2.

The following hypotheses have been considered:

- A period of 3 weeks of Training (5 days a week) - 5 days in harbour and 10 days at sea.
- A total number of 32 trainees per ship.

This training does not include any military operational training notably no live-firing training.

The Contract does not include the operation Training for the OPV crew which is deemed to be trained in Argentina by the ARA.

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3 Initial OLM Maintenance Training

Training sessions for OPV1 and OPV2 will take place in France before each ship delivery dedicated to the first crew of each ship.

In order for the trainees to benefit from the Training program, all trainees shall fulfil the following prerequisites:

- 5 years of ship operation, building or on board repair activities;
- A sufficient knowledge in reading and speaking English.

This training will provide the crews with:

- A general knowledge of the ship and its subsystems;
- The knowledge to perform on board level maintenance (OLM) operations.

The content of the OLM Training will be provided by the Contractor to the Buyer in the Training Plan at T0+12. Within the limit of one day for 20 main equipment on-board each ship, this Training consists in:

- Setting to work of equipment on board;
- Technical and maintenance training courses on systems and equipment run by the Contractor and/or the Original Equipment Manufacturers (OEM). The objectives of the training programme are to fulfil Onboard Level of Maintenance (OLM) tasks (crew level) and carry out troubleshooting with the aim of returning to safe systems operation mode.

The following hypotheses have been considered:

- Training is done during the setting to work phases of the 20 equipment;
- A tentative Training period from T0+21 to T0+23 for OPV1;
- A tentative Training period from T0+27 to T0+29 for OPV2.

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4 Initial DLM Maintenance Training

A DLM training plan will be implemented in order for ARA's maintainers to develop their knowledge and then to be able to maintain the OPV 87 equipment up to Depot Level of Maintenance.

These training courses will be conducted by the OEMs; they will take place either on OEM production site or in the Contractor's shipbuilding site in France.

This DLM training will be split into several specialty courses, each comprising a maximum of 6 trainees (including instructors) in order for the course to be really beneficial and for a total of 131 days for the whole set of Training.

In order to benefit from the training program, all trainees shall fulfil the following prerequisites:

- 5 years of ship maintenance operations up to Depot Level of Maintenance, each in his speciality; and
- A sufficient knowledge in reading and speaking English.

The content of the DLM Training will be provided by the Contractor to the Buyer in the Training Plan at T0+12. It will describe the schedule and the process to be performed for the training sessions.

The description and the volume of the courses are the following:

Table 2. Description and Volume of the Courses

Description of the course	Number of days/course
Main engines	10
Gearboxes	5
Shaftbearings-propellers	10
Diesel Genset	5
PMS hardware/software	5
Interior communications	5
Switchboards	5
Gyrocompass	5
Alternators	5
Bow thruster	5
30 mm main gun and FCS	10
12.7 mm secondary guns	2
Fins stabilizers	5
Steering gear	2
Hydraulics for deck equipment	3
HVAC Equipment	5
POLARIS®, NIDL®	10
Consoles, Software, LAN	5
Surveillance radar (SCANTER)	10
Navigation Radars	5
External communication	10
RHIBs system	2
Osmosis unit	1
Safety systems	1

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5 Training Acceptance

Operations Training of the crew will be accepted on the following criteria:

- The following documents have been delivered: Training Plan, training support documentation;
- The sessions planned in the Training Plan have been performed and the courses timesheets have been signed by both Parties.

OLM Training of the crew will be accepted on the following criteria:

- The following documents have been delivered: OLM Training Plan, training support documentation;
- The sessions planned in the Training Plan have been performed and the courses timesheets have been signed by both Parties.

DLM Training of the ARA's maintainers will be accepted on the following criteria:

- The following documents have been delivered: DLM Training Plan, training support documentation;
- The sessions planned in the Training Plan have been performed and the courses timesheets have been signed by both Parties.

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A. Acronyms**D**

DLM Depot Level Maintenance

HHVAC Heating, Ventilation and Air
Conditioning**L**

LRU Line Replaceable Unit

O

OEM Original Equipment Manufacturer

OLM On board Level Maintenance

OPV Offshore Patrol Vessel

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Anexo F 3 OPV 87 for the Armada Argentina



Acceptance Tests



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PÚBLICO

1 Introduction

1.1 Scope of the Document

This document is the Anexo F of the Contract for the provision of three OPV to the Armada Argentina and provides the description and the list of the Acceptance Tests to be carried out on the OPV (HAT and SAT).

1.2 Designations & Definitions

The following designations and definitions are applicable:

Table 1. Programme Definitions

Term	Definition
Acceptance	Process demonstrating that a product is compliant with the specified requirements. This process leads to a formal acceptance decision.
Acceptance Test	Test (checks or trials) that has to be performed before Acceptance of the OPV
ATP	Acceptance Test Procedure to be delivered two weeks before the Test
ATR	Acceptance Test Report to be issued and signed after the Test completion
Buyer	The ARMADA ARGENTINA (ARA)
Seller	NAVAL GROUP
HAT	Harbour Acceptance Test conducted on the Ship, subject to Acceptance by the Buyer
SAT	Sea Acceptance Test conducted on the Ship, subject to Acceptance by the Buyer
Test Plan	General document containing the list and the main content of the HAT and SAT to be carried out on the OPV to be delivered at T0+20

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2 HAT and SAT

2.1 HAT and SAT Process

The Seller will plan the tests to be performed on the ships. The following main points must be considered:

- HAT (Harbour Acceptance Tests) and SAT (Sea Acceptance Tests) will be performed on each OPV 87 to demonstrate proper functioning of the ship. The list of these operations is given hereafter.
- The capability of the ship to go at sea will be checked and certified by the French maritime administration before the first sea going.
- For OPV1 to 3, the French maritime administration will be the ship's flag of registration from the initial sea going until the delivery of the ship to the Buyer in France.
- During HAT and SAT, the ship will be manned by the Contractor's crew.
- Platform and Combat System acceptance tests will be performed in French sea waters with Seller's resources and Buyer's attendees.

The Seller will provide the Buyer with a Tests Plan defining the tests to be performed on the ships at T0+20.

The Acceptance Test Procedures (ATP) that will provide detailed procedure for each individual test implementation will be delivered 2 weeks before the relevant Test.

At the receipt of the ATP, the Buyer shall inform the Seller about the CI representatives to be appointed to the Test.

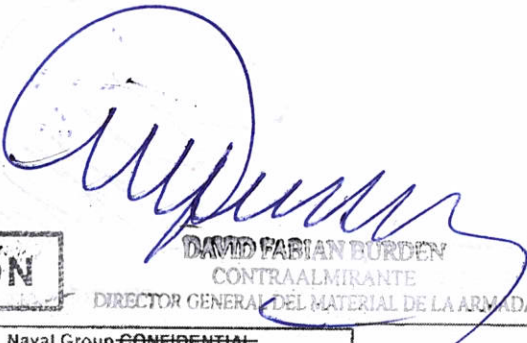
During HAT and SAT, Acceptance Test Reports (ATR) will be produced and signed by the Buyer (CI) and the Seller at the end of the relevant tests.

Minor defects shall not prevent the signature of the corresponding ATR. Such Minor Defects will be listed in the ATR and be corrected during the Warranty Period.

Should the Buyer representatives not be present to the Acceptance Test, such Test shall be performed by the Seller and its result deems to be accepted by the Buyer with the relating effect of the signature of the corresponding ATR.

The Acceptance of HAT and SAT is part of the Acceptance of the OPV.

Note: others industrial tests will be performed on the OPV; the Comisión de Inspección will have the right to witness those tests.



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2.2 List of HAT and SAT

Table 2. List of HAT and SAT to Be Conducted on Each OPV

Title	OPV 1	OPV 2	OPV 3	Harbour/Sea
Platform				
Speed	X	X	X	SAT
IMO tests (manoeuvrability, crash stop)	X	X	X	SAT
Compartment inspection	X	X	X	HAT
Ship's range (fuel consumption)	X	X	X	HAT/SAT
Combat System				
Main gun functional test	X	X	X	HAT
Main gun live firing	X			In Argentina after OPV 1 delivery
Surveillance radar test	X	X	X	SAT (On opportunity target)
IFF transponder test	X	X	X	HAT
Optronic system test	X	X	X	SAT (On opportunity target)
Heavy Machine Guns functional test	X	X	X	HAT
Combat Management System				
Polaris Combat Management System test	X	X	X	HAT
Tactical situation test	X	X	X	SAT (On opportunity targets)
Communication system				
Internal communication test	X	X	X	HAT
External communication test	X	X	X	HAT/SAT

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A. Acronyms**A**

ATP Acceptance Test Procedure
ATR Acceptance Test Report

H

HAT Harbour Acceptance Test

I

IFF Identification, Friend or Foe

O

OPV Offshore Patrol Vessel

S

SAT Sea Acceptance Test


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Anexo G 3 OPV 87 for the Armada Argentina



END-USER CERTIFICATE



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ANEXO G

FRENCH REPUBLIC
MINISTRY OF DEFENCE



END-USER CERTIFICATE NON TRANSFER CERTIFICATE

1. Name of French company :

NAVAL GROUP

2. Name, address of end-user :

**REPÚBLICA ARGENTINA
MINISTERIO DE DEFENSA
ARMADA ARGENTINA
AVENIDA COMODORO PY 2055
CIUDAD AUTÓNOMA DE BUENOS AIRES**

3. End-use State :

ARGENTINA

4. Reference number of prior governmental agreement (sale level): N° 16 004794 - 17 001540 - 17 000648

5. Reference number of contract or order: Contract ARA-NAVALGROUP N° xx/2018 dated

2018

6. Products :

QUANTITIES	GOODS
1	OPV L'Adroit delivered in France (OPV 1)
3	OPV 87 (L'Adroit-class) built and delivered in France (OPV 2, OPV 3 and OPV 4)
4 sets	Initial Logistic Package (On-board Spares, Tools, Mobile Items, On-board Documentation)
1 set	Ammunition for the 30 mm main guns (20 000 units)
1 set	Ammunition for the 12.7 mm machine guns (20 000 units)
1 set	Maintenance Training in France for Naval Base maintainers and associated Maintenance Documentation
3 sets	Crew Training in France for OPV 1, OPV 2 and OPV 3 (Ship Operation and On-Board Maintenance Training)

7 - Certification of foreign consignee

We certify that we are importing the goods defined in section 6, which shall be delivered to the end-user specified in section 2. With the exception of the end-user specified in section 2, we will not sell, give, lend, transmit to any third party or export the goods, including any related specific supplies, spare parts or tools delivered within the scope of after sales services, in addition to the related documentation and user manuals, without the prior written approval of the French Government.

Signature _____

Name and title of signatory _____

Date _____

Seal _____

8 - Utilization (please state the specific purpose for which the goods are to be used):

The object of the Contract is the delivery of the OPV L'Adroit and the construction and the delivery in France of 3 OPV 87 (L'Adroit-class) ready to operate with their Initial Logistic Package and Ammunition.

The Contract also includes the Crews training and the Depot Level Maintenance (DLM) training.

Traduction de courtoisie du texte français

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ANEXO G

Name of French company : NAVAL GROUP	Name, address of end-user : REPÚBLICA ARGENTINA MINISTERIO DE DEFENSA ARMADA ARGENTINA AVENIDA COMODORO PY 2055 CIUDAD AUTÓNOMA DE BUENOS AIRES	End-use State : ARGENTINA
--	---	-------------------------------------

Reference number of prior governmental agreement (sale level): N° 16 004794 - 17 001540 - 17 000648

Reference number of contract or order: Contract ARA-NAVALGROUP N° xx/2018 dated _____, 2018

9 - Certification of foreign end-user

a) We certify that we are the end-user of the goods specified in section 6.

We will not sell, give, lend, transmit to any third party or export the "Goods" as specified in Section 6, including any related specific supplies, spare parts or tools delivered within the scope of after sales services, in addition to the related documentation and user manuals, without the prior written approval of the French Government.

Signature _____

Name and title of signatory _____

Date _____

Seal _____

b) We certify that the goods specified in section 6 are destined to be integrated into our own manufactured products and, accordingly, will not be sold, given, lent, transmitted to any third party or exported as such without the prior written approval of the French Government.

Signature _____

Name and title of signatory _____

Date _____

Seal _____

10 - Certification of the Government of the End-user State

We certify that the End-user specified in section 2 is authorised to acquire the goods specified in section 6.

a) We will not authorise the re-export, re-sale, lending, giving or transmission to any third party of the goods specified in section 6, including related specific supplies, spare parts or tools delivered within the scope of after sales services, in addition to the related documentation and user manuals, without the prior written approval of the French Government.

Signature _____

Name and title of signatory _____

Date _____

Seal _____

b) We certify that we take note of the obligations regarding the goods specified in section 6 which are subject in the scope of the French rules and regulations of military goods.

Signature _____

Name and title of signatory _____

Date _____

Seal _____

Traduction de courtoisie du texte français

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Anexo H 3 OPV 87 for the Armada Argentina



Certificado de Aceptacion



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ANEXO H

CONTRATO NAVAL GROUP-ARA
No 01/2017

NAVAL
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Referencia del Certificado: xx-xx-xxxxxx

CERTIFICADO DE ACEPTACIÓN

CONTRATO No: 01/2017	
OPV No X	FECHA DE ACEPTACIÓN: xxxxxxxxxxxx
EVENTO ACEPTADO: SUMINISTRO DE xxxxxx	
DESCRIPCION DEL SUMINISTRO ACEPTADO: - - - -	
Como agente debidamente autorizado del VENDEDOR, confirmo que la información precedente es justa y correcta. Firma: Nombre: xxxxxxxxxxxxxx Título: Representante de NAVAL GROUP xxxxxx Fecha: xxxxxxxxxxxxxxxx	Como agente debidamente autorizado del COMPRADOR, confirmo que la información precedente es justa y correcta. Firma: Nombre: xxxxxxxxxxxxxx Título: Representante de la ARA, xxxxxx Fecha: xxxxxxxxxxxxxxxx

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ANEXO H

CONTRATO NAVAL GROUP-ARA
No 01/2017

NAVAL
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Referencia del Certificado: xx-xx-xxxxxx

APÉNDICE 1: LISTA DE RESERVAS O FALLAS MENORES

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Anexo I 4 OPV for the Armada Argentina



Garantías Bancarias



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1 Introduction

1.1 Scope of the Document

This document is the Anexo I to the Contract for the provision of four OPV to the Armada Argentina and provides the models of the Bank Guarantees to be set up in a first-rank European Bank.

1.2 Designations & Definitions

The following designations and definitions are applicable:

Table 1. Definitions

Term	Definition
Buyer	The ARMADA ARGENTINA (ARA)
Contract	The contract between the Buyer and the Seller for the provision of 4 OPV and associated services (OPV L'Adroit and three new OPV 87)
Seller	NAVAL GROUP
LGAP	Letter of Guarantee for Advance Payment
LGP	Letter of Guarantee of Performance



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2 Form of Letter of Guarantee for Advance Payment (LGAP)

Letter of Guarantee N° xxxxx

Date:

To: ARMADA ARGENTINA

In consideration of the Contract ARA-NAVALGROUP No. xx/2018 between the ARMADA ARGENTINA and NAVAL GROUP, and in further consideration of Article 4 [Payment] and of Article 17 [Bank Guarantees] of the said Contract, stipulating that an amount equivalent to 20% (twenty percent) of the total amount of the Contract shall be paid in advance to NAVAL GROUP;

At the request of NAVAL GROUP, we, the undersigned [Name of the Bank], with a capital of [Capital], whose head office is located at [Address], represented by [Representative], hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of Fifty Seven Million Five Hundred Twenty Thousand Euros (€ 57.520.000) upon receipt by us of your first demand in writing together with the following documents:

- a. A copy of a registered letter with acknowledgement of receipt sent by the ARMADA ARGENTINA to NAVAL GROUP stating which contractual obligations who covers the amount of the Advance Payment were not fulfilled, and giving full details of the NAVAL GROUP's default;
- b. A copy of a registered letter with acknowledgement sent by the ARMADA ARGENTINA to NAVAL GROUP dated not earlier than fifteen (15) days after the letter stated in a) stating that NAVAL GROUP has not remedied the default.

This bank guarantee shall come into force upon receipt by NAVAL GROUP of the related Advance Payment.

The LGAP shall be automatically reduced pro rata the payments made under the Contract, upon presentation to the Bank by NAVAL GROUP of the copy of the payment invoice as described in the table below.

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OPV	CUOTA	T0+	Amount of the LGAP in Euros
		0	57 520 000
OPV I'ADROIT	CUOTA 1	4	43 616 000
OPV 87 N°1	CUOTA 1	7	39 322 667
OPV 87 N°1	CUOTA 2	10	35 888 000
OPV I'ADROIT	CUOTA 2	12	33 488 000
OPV 87 N°2	CUOTA 1	13	29 194 667
OPV 87 N°1	CUOTA 3	15	26 618 667
OPV 87 N°2	CUOTA 2	16	23 184 000
OPV 87 N°1	CUOTA 4	18	21 466 667
OPV 87 N°3	CUOTA 1	19	17 173 333
OPV 87 N°2	CUOTA 3	21	14 597 333
OPV 87 N°1	CUOTA 5	22	13 738 667
OPV 87 N°3	CUOTA 2	22	10 304 000
OPV 87 N°2	CUOTA 4	24	8 586 667
OPV 87 N°1	CUOTA 6	26	7 728 000
OPV 87 N°3	CUOTA 3	27	5 152 000
OPV 87 N°2	CUOTA 5	28	4 293 333
OPV 87 N°3	CUOTA 4	30	2 576 000
OPV 87 N°2	CUOTA 6	32	1 717 333
OPV 87 N°3	CUOTA 5	34	858 667
OPV 87 N°3	CUOTA 6	38	0

The LGAP shall automatically expire and cease to be valid until the signature of the above OPV 87 N° 3 CUOTA 6 Acceptance Certificate by the Client but not later than [date].

This Bank Guarantee shall remain valid as stated above, after which it shall be automatically considered null and void and cancelled by us, whether this document is returned or not to us for cancellation.

This guarantee is subject to the International Chamber of Commerce Uniform Rules for Demand Guarantees (URGD 758).

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3 Form of Letter of Guarantee of Performance (LGP)

Letter of Guarantee N°

Date:

To: ARMADA ARGENTINA

In consideration of the Contract ARA-NAVALGROUP xx/2018 between the ARMADA ARGENTINA and NAVAL GROUP and in further consideration of Article 17, [Bank Guarantees] of the said Contract, stipulating that a Bank Guarantee for Performance (LGP), which represents five percent (5%) of the total price of the Contract, shall be deposited by the Seller within 20 days from the effective date of this Contract

At the request of NAVAL GROUP, we, the undersigned [Name of the Bank], with a capital of [Capital], whose head office is located at [Address], represented by [Representative], hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of Fourteen Million Three Hundred Eighty Thousand Euros (€ 14.380.000) upon receipt by us of your first demand in writing together with the following documents:

- a. A copy of a registered letter with acknowledgement of receipt sent by the ARMADA ARGENTINA to NAVAL GROUP stating which contractual obligations under the Contract were not fulfilled, and giving full details of the NAVAL GROUP's default;
- b. A copy of a registered letter with acknowledgement sent by the ARMADA ARGENTINA to NAVAL GROUP dated not earlier than fifteen (15) days after the letter stated in a) stating that NAVAL GROUP has not remedied the default.

The LGP shall be progressively reduced as set out hereafter:

- a. First reduction in the LGP of 20% of its value on acceptance of the OPV L'Adroit CUOTA 2 (OPV L'Adroit delivery) by the Client, upon signature of the Milestone OPV L'Adroit CUOTA 2 Acceptance Certificate as per the Payment Schedule in Annex D.
- b. A second reduction in the LGP of 20% of its value on acceptance of the OPV 87 N°1 CUOTA 6 (OPV 87 N°1 delivery) by the Client, upon signature of the Milestone OPV 87 N° 1 CUOTA 6 Acceptance Certificate as per the Payment Schedule in Annex D.
- c. A third reduction in the LGP of 20% of its value on acceptance of the Milestone OPV 87 N°2 CUOTA 6 (OPV 87 N°2 delivery) by the Client, upon signature of the Milestone OPV 87 N°2 CUOTA 6 Acceptance Certificate as per the Payment Schedule in Annex D.
- d. A fourth reduction in the LGP of 20% of its value on acceptance of the Milestone OPV 87 N°3 CUOTA 6 (OPV 87 N°3 delivery) by the Client, upon signature of the Milestone OPV 87 N°3 CUOTA 6 Acceptance Certificate as per the Payment Schedule in Annex D.
- e. A final reduction in the LGP of 20% of its value on termination of the Technical Warranty period of OPV 87 N°3.

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The LGP shall automatically expire and cease to be valid until the end of the Warranty period of OPV 87 N°3 but not later than [date].

This Bank Guarantee shall remain valid as stated above, after which it shall be automatically considered null and void and cancelled by us, whether this document is returned or not to us for cancellation.

This Guarantee is subject to the International Chamber of Commerce Uniform Rules for Demand Guarantees (URGD 758).



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Hoja Adicional de Firmas
Anexo

Número:

Referencia: EX-2018-30519869- -APN-SJEM#ARA - Contrato y sus Anexos

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