Claims

1. An integrated antenna device ~~(3), characterized in that it comprises~~comprising a protective casing ~~(300)~~ of hydrodynamic shape delimiting an inner cavity closed by an upper closing plate, the protective casing comprising on its upper part ~~and~~ an upper fixing interface suitable for being fixed mechanically on a carrier structure ~~(10)~~, the integrated antenna device ~~furthermore~~ further comprising ~~an~~ a sonar antenna ~~(31)~~ entirely housed inside the inner cavity ~~craft~~ and fixed to the internal wall of the protective casing at the level of at least one fixing point of the protective casing, an assembly of cables comprising power supply and signals reception cables ~~(350)~~ linked to the sonar antenna ~~(31)~~, the integrated antenna device being deprived of any mechanical interface between the sonar antenna and the carrier structure, wherein the inner cavity comprises a pressurized non-ionic protective liquid in which the sonar antenna is immersed, and wherein ~~and in that~~ the protective casing is closed in a hermetic manner by the upper fixing interface and the upper closing plate comprises means for leaktight passage of the cables inside the protective casing~~and traversed in a leaktight manner by said cables (35)~~.

2. The integrated antenna device ~~(3)~~ as claimed in claim 1, ~~characterized in that~~wherein the protective casing ~~(300)~~ comprises a lower dome fixed to the upper ~~(30) and a~~ closing plate ~~(33) which are joined together~~ in a leaktight manner.

3. The integrated antenna device ~~(3)~~ as claimed in claim 2, ~~characterized in that~~wherein the dome has a circular drum shape or a streamlined hydrodynamic shape.

4. The integrated antenna device ~~(3)~~ as claimed in any one of ~~the preceding~~ claims 1 to 3, ~~characterized in that~~wherein the ~~cavity comprises a~~ protective liquid ~~(32) in which the antenna (31) bathes, said protective liquid being~~is chosen to ensure the acoustic matching of the sonar antenna.

~~5. The integrated antenna device (3) as claimed in claim 4, characterized in that the protective liquid (32) is a non-ionic fluid.~~

~~6~~5. The integrated antenna device ~~(3)~~ as claimed in any one of claims 1 to ~~4claim 5~~, ~~characterized in that~~wherein the non-ionic fluid is an oil.

~~7~~6. The integrated antenna device ~~(3)~~ as claimed in any one of claims ~~4~~ 1 to ~~6~~5, ~~characterized in that~~wherein the protective liquid is pressurized by applying a chosen setpoint pressure.

~~8~~7. The integrated antenna device ~~(3)~~ as claimed in claim ~~7~~6, ~~characterized in that~~wherein the protective casing ~~(300)~~ comprises a pressurizing nozzle ~~(330)~~, and ~~in that~~ the protective liquid is pressurized by means of a pressurization pump linked to the pressurizing nozzle by a pressurization pipe ~~(351)~~.

~~9. The integrated antenna device (3) as claimed in one of the preceding claims, characterized in that the antenna (31) is a sonar antenna.~~

~~10~~8. A carrier structure assembly comprising a carrier structure ~~(10) intended to receive said~~ and an integrated antenna device ~~as claimed in one of claims 1 to 9~~, the carrier structure being ~~intended to be~~ at least partially immersed, the carrier structure comprising a platform ~~configured to be~~ emerged above a water level and a bottom wall ~~(100)~~, ~~characterized in that~~wherein it comprises a chimney ~~(37)~~ passing through the bottom wall of the structure and opening out on the platform, the chimney ~~(37)~~ having a lower aperture at the level of the bottom wall of the structure and an upper aperture above the water level, the chimney ~~(37)~~ having a transverse cross section of chosen dimensions, the integrated antenna device comprising a protective casing of hydrodynamic shape delimiting an inner cavity closed by an upper closing plate, the protective casing comprising on its upper part an upper ~~and in that the~~ fixing interface, ~~of~~

~~said~~the integrated antenna device ~~is adapted to be~~being mechanically fixed ~~on~~ via the upper fixing interface to a bottom wall of the carrier structure, the integrated antenna device further comprising a sonar antenna entirely housed inside the inner cavity and fixed to an internal wall of the protective casing at at least one fixing point of the protective casing, an assembly of cables comprising power supply and signals reception cables linked to the sonar antenna, the integrated antenna device being deprived of any mechanical interface between the sonar antenna and the carrier structure, wherein the protective casing is closed in a hermetic manner by the upper fixing interface and the upper closing plate comprises means for leaktight passage of the cables inside the protective casing, wherein the inner cavity comprises a pressurized non-ionic protective liquid in which the sonar antenna is immersed, the fixing interface of the integrated antenna device being fixed on the bottom wall of the carrier structure ~~the bottom wall of the structure~~ of the surface vessel at the level of the lower aperture of the chimney, the chimney ~~(37)~~ being configured to allow the passage of the cables ~~(35)~~ leading from the antenna device ~~(3)~~ to the platform of the carrier structure.

~~11~~9. The carrier structure assembly as claimed in claim ~~10~~8, ~~characterized in that~~wherein it comprises a matching piece ~~(39)~~ provided at the level of the lower aperture ~~(370)~~ of the chimney ~~(37)~~ and ~~hugging~~ matching the shape of the bottom wall of the structure at the level of the lower aperture of the chimney ~~(37)~~, the fixing interface of the integrated antenna device ~~(3)~~ being able to be fixed on the matching piece of the carrier structure.

~~12~~10. A method ~~of~~ for mounting an integrated antenna device ~~(3)~~ on a carrier structure at least partially immersed ~~(10)~~ comprising a platform emerged above a water level, a bottom wall ~~(100)~~ and a chimney ~~(37)~~ passing through the bottom wall and opening out on the platform, the chimney ~~(37)~~ having a lower aperture ~~(370)~~ at ~~the level of~~ the bottom wall and an upper aperture above the water level, ~~characterized in that~~wherein it comprises ~~the following steps~~:

- providing an integrated antenna device comprising a protective casing ~~(300)~~ of hydrodynamic shape delimiting an inner cavity closed by an upper fixing interface, the integrated antenna, the integrated antenna device ~~furthermore~~ further comprising ~~an~~ a sonar antenna ~~(31)~~ housed entirely inside the inner cavity and fixed to an internal wall of the protective casing at at least one fixing point of the protective casing~~craft~~, an assembly of cables comprising power supply and signals reception cables ~~(350)~~ linked to the antenna ~~(31)~~, the protective casing being closed in a hermetic manner and the upper closing plate comprising means for leaktight passage of the cables inside the protective casing, the inner cavity comprising a pressurized non-ionic protective liquid in which the sonar antenna is immersed; ~~and traversed in a leaktight manner by said cables (35)~~,

- positioning the integrated antenna device ~~(3)~~ in the vicinity of the lower aperture of the chimney;

- routing the cables of the integrated antenna device ~~(3)~~ along the chimney ~~(37)~~ up to the platform, and

- fixing the upper fixing interface of the integrated antenna device ~~(3)~~ to the bottom wall of the carrier structure, the integrated antenna device being deprived of any mechanical interface between the sonar antenna and the carrier structure.

~~13~~11. The method of mounting as claimed in claim ~~12~~10, ~~characterized in that it furthermore comprises the steps consisting in~~further comprising:

- providing an upper fixing interface on the integrated antenna device ~~(3)~~; and

- providing a conjugate fixing interface mating with the fixing interface of the integrated antenna device ~~(3)~~ on the bottom wall of the carrier structure, at the level of the lower aperture of the chimney,

and ~~in that the step of~~wherein positioning the antenna device ~~(3)~~ comprises ~~the step consisting in~~ positioning the antenna device ~~(3)~~ in the vicinity of the fixing interface of the bottom wall of the structure while ~~the~~ fixing ~~step~~ comprises ~~the~~ fixing of the antenna device ~~(3)~~ to the bottom wall of the structure by

mechanically joining the fixing interface of the antenna device ~~(3)~~ to the fixing interface provided on the bottom wall of the carrier structure ~~(39)~~.