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MBARI
7700 Sandholdt Road
Moss Landing
CA 95039
USA

Attention: Mr Dale Graves

Dear Dale,

Thank you for inviting SMD Hydrovision (SMDH) to offer a rough order of magnitude quotation for the supply of the Tiburon II Scientific ROV system as specified in your request for quotation document. Please find attached the ROM price list, a technical comments/compliance document which discusses the details of the MBARI technical requirement document and a system specification for the Tiburon II ROV system. The electro-hydraulic Tiburon II ROV system offered is **fully compliant** with the MBARI requirement.

The Tiburon II ROV system offered is based on the SMDH Quantum workclass ROV system. This is the flagship ROV in the SMDH Q-series range of ROV's and provides a versatile and stable underwater platform capable of operating and deploying electronic and hydraulic tools and accessories necessary to perform the tasks required of a 4000msw rated scientific ROV system. The vehicle can be used to carry, control and power specialised tools designed to perform specific underwater tasks. The Quantum ROV is typically a 125-150shp ROV but due to the constraints of the umbilical cable the Tiburon II ROV is offered with a 50shp power pack.

The detailed configuration of the Tiburon II ROV will match the MBARI specification and so will be different from our standard Quantum ROV system hence many of the Curvetech hydraulic assemblies and DVECS control system assemblies for the Tiburon II ROV will be modified versions of the assemblies used in the Quantum ROV system (Curvetech is the brand name for subsea hydraulic assemblies designed and manufactured by SMDH). Some of the technical aspects of the system require further investigation and we are happy to work with MBARI engineers to ensure the final design offers the best performance possible within the specified constraints.

Over the past 3 years - since acquiring Hydrovision in 2003 - SMDH has taken the experience gained building some of the world's largest and most complex ROV trenching systems and developed a range of work ROV systems known as the Q-Series of which the Quantum is the flagship model. The Q-Series line up also includes the Quark, Quasar and Centurion QX (Subsea 7 only) ROV models which use many common components but offer different levels of capability. The range has been met with unprecedented enthusiasm by the industry and after only 1 year, four Quantum systems and one Quark system have been delivered and are operating successfully. In addition to this a further two Quantum, two Quasar and five Centurion QX systems are under construction at the moment.



The design philosophy inherent in all SMDH ROV systems is to offer class leading capability with the flexibility to do the most demanding tasks our customers expect with increased levels of reliability borne from simplifying the complexity of the ROV. As an example, to reduce the complexity of the main ROV pod the ROV has a distributed control system which means all hydraulic and electrical control assemblies have a simple 24Vdc and RS 485 serial data interface. All ROV valve packs and electrical junction boxes have this interface which offers reduced harness size, increased versatility and better diagnostics. In spite of this type of advancement, the subassemblies are still very easily serviced by pilot technicians and use many off the shelf components to streamline spare part supply and minimise obsolescence.

Although the Q-series range of ROV systems has been brought to market fairly recently, the subassemblies used are an evolution of the Curvetech hydraulic assemblies and DVECS control assemblies which have been field proven over many years in a large number of subsea systems.

Recent high profile customers committed to Q-Series ROV systems include Subsea 7 who has ordered a substantial number of Centurion QX ROVs. These use the same components as Quantum but are packaged to retain Subsea 7s identity.

Delivery for the Tiburon II ROV system is estimated at 28 weeks from order and is subject to manufacture capacity at the time of placing an order. As you would expect the SMDH Management and Quality system is approved to ISO 9001:2000 and if required we can provide examples of a Tiburon II quality plan, project management system and risk/safety management methods used during design and manufacture.

SMDH have also recently purchased a full ROV simulator system and have under development extensive classroom facilities which will include a "dissected" ROV system for unparalleled customer training. Further information can be supplied regarding this if required.

I hope the proposed Tiburon II system is acceptable to MBARI and we would welcome the opportunity to discuss the content of the proposal at your convenience. If you consider some aspects of the equipment we have offered should be changed to better match your requirements we are happy to discuss and offer alternative configurations.

Yours sincerely



Dave Grant

Regional Manager