SA NAVY: A COLLABORATIVE ENGAGEMENT WITH THE PRIVATE SECTOR

ABSTRACT

The South African Navy is in the process of receiving four Meko A-200 Corvettes and three Type 209 submarines, as part of the greater Strategic Defence Packages, in pursuance of a balanced, technologically advanced maritime force design, which in part will be able to meet the requirements for a credible maritime defence. The corvettes and the submarines bring with them systems and equipment not seen or operated by the SA Navy before, marking a quantum leap for us in the training of operators and maintainers, in the structures aimed at maintaining and repairing such systems, and in the manner in which we will be able to operate these vessels. Coupled to the challenges mentioned above, the SA Navy has a responsibility to achieve this credible maritime defence within a financially restrictive environment. This has led to us having to evaluate every process and sub-process for economy, efficiency and effectiveness. This ongoing study indicates the necessity for a partnership to be created between the SA Navy and private industry, which will be able to maintain and repair our new corvettes and submarines in a manner which will be sustainable and support the operational usage of such vessels. This paper endeavours to explore the requirements and conceptual possibilities for such a partnership.

INTRODUCTION

The South African Navy (SAN) is at present at a very interesting juncture in its history. The SAN as an integral and important division of the SANDF has been part of the transformation of the defence of the country and to make defence appropriate to the majority of the population. The transformation has an extraordinary influence on the SAN, in that, as part of this transformation, the Strategic Defence Package includes the procurement of four new Meko A-200 Corvettes and three Type 209 submarines. This replacement of antiquated equipment and the provision of vital naval capabilities are important to the SAN and will strengthen the strategic maritime capability of South Africa and the region.

The delivery of the new corvettes and submarines will bring with it some challenges for the SAN. The new ships and submarines will see the introduction of a host of new technologies for which the SA Navy is busy preparing itself. The most important challenge before us is the effort that will have to be spent to integrate the new acquisitions as effective operational units into the South African Navy. This effort will include various activities such as the acceptance of the ships, submarines and their equipment, the creation of Doctrine, Tactics & Standing Operating Procedures, and Operational Test & Evaluation. All these will culminate in prepared and capable ships and submarines being available for deployment in support of national objectives.

The procurement of the new corvettes and submarines is progressing well. The delivery of the new corvettes was well publicised. These vessels are now all in the Naval Base Simon's Town being fitted with their combat suites by the German Frigate Consortium. The lead ship, SAS AMATOLA, will be the first to do its operational testing as soon as it has been handed over from the contractor to the

SAN. This should take place towards October this year. As for the submarines that are being built in Germany, the first one has been launched and is expected to be in South African waters at the beginning of 2006.

The Strategic Defence Packages include the obligation on the contractor to provide industrial participation by South African companies. This obligation, in some cases has included technology transfer to some South African companies. This creates the opportunity for the SA Navy to tap into this capability for the support of systems and equipment.

With the Fleet of the SA Navy being renewed, it is an appropriate time to reflect on the way the SA Navy supports ships and submarines together with their respective weapon systems.

SOME INTERNATIONAL TRENDS

After democracy in 1994, the doors opened for South Africa to become part of the international community and also to have access to the international arms manufacturers for the acquisition of new weapon systems. This has created the opportunity to widen the horizons for the acquisition of ships, submarines and weapon systems. The newly found democracy has also led to more and more countries having co-operation agreements with South Africa. All these opportunities have opened doors for the SA Navy to be exposed to international trends in ship and weapon system support.

Government funding is the most important resource required by a defence force to fulfil its function. Internationally defence forces remain under pressure of shrinking budgets and more and more demands being placed to deploy forces in support of national and international objectives. An illustration is provided by the £6 cut over a period of 3 years announced by the UK Ministry of Defence.[i] This happens at a time when the UK has many forces deployed. The announcement also stated that the majority of the cuts will have to be adsorbed in Logistic Support spending. This situation is not unfamiliar in many defence forces of the world. Internationally it is clear that there is a drive towards reducing the life cycle cost of military materiel. It is also constantly necessary to be able to show that savings obtained are in real monetory terms. Taxpayers all over the world require "*more bang for less bucks*".

To put the South African Navy's initiative in perspective, it should be seen in the context of some international trends in this regard. These are reflected broadly below.

United Kingdom[ii]

In the United Kingdom efforts to improve the efficiency of warship support started in 1987 with the Government owned and Contractor Operated Dockyards (depot level repair facility) at Devonport and Rosyth. These dockyards were privatised in 1997. This initiative was aimed at reducing cost to the UK MoD by increasing the efficiency of these facilities by creating the environment in which they could increase their scope of business and clients.

In April 2000 a Defence Logistic Organisation (DLO)[iii] was established. The ship support is the responsibility of the Warship Support Agency (WSA) and the Integrated Project Teams (IPT) charged with the responsibility of through life management of ship support. The objective is Life Cycle Cost reductions that start at procurement phase. Initiatives that are receiving attention at present are to enter into commercial agreements with contractors to support ships and even equipment on the basis of availability. The MoD is even leasing on long term OPVs (Offshore Patrol Vessels) from Vosper Thorneycroft.

The Royal Navy is, through restructuring its own support capabilities, and with the judicial and innovative outsourcing of work, reducing its cost to provide ships for operations.

Germany[iv]

The German Navy is supporting their ships and submarines in a way that has proven itself over the years to be the most effective for their requirement. Their approach is to have an organic support capability onboard their vessels and the "Arsenal" provides that depot support. During the refit and major upkeep events of vessels, the "Arsenal" is normally responsible for all the maintenance and repair of combat suite systems and equipment. The hull and machinery on the other hand is normally contracted to the local industry that bid on a competitive manner for the work.

The German Navy is satisfied with the manner in which they support their vessels and is within this known concept always trying to be efficient and constantly improving efficiency.

General Thoughts

In the international arena of naval ship support, all navies are constantly seeking ways and means to reduce the operating and support cost of ships and submarines. Contractors are increasingly being integrated into the naval ship support activities. The greater involvement of the industry and an associated innovative contracting, is the predominant trend in international support of naval vessels. Internal reforms in the Navies emphasise the need to use logistic resources efficiently, and to avoid unnecessary duplication of effort between industry and their own capability. Flexibility to react to changing needs in logistic requirements is a factor that needs to be noted as support is mostly optimised during time of peace, but requirements could change rapidly during time of conflicts.

It is clear the naval ship support is a subject that is internationally being optimised for the individual Navy's needs. With the delivery of four Meko A-200 Corvettes and three Type 209 submarines the SA Navy is provided with the opportunity to reconsider its own situation wrt support provided to the new vessels.

SAN PERSPECTIVE

Naval Logistics Policy

The SA Navy Logistic Policy[v] is summarised, as “appropriate and quality materiel, facilities and logistics services must be provided to ensure that the levels of availability of vessels for operations are met at all times”.

To put this policy into practice, the SA Navy has adopted a System Management approach to Integrated Logistics Support (ILS), making it possible to utilise its available resources in the most cost-effective manner. System Managers are allocated a Product System and are responsible to ensure the effective and economical logistics support for these Product Systems, throughout their life cycles. System Managers are therefore involved in the planning, organising, directing and controlling of all the integrated logistics support (ILS) elements for their allocated Product Systems.

The following points describe some of the statements that form the ILS Concepts applicable to the Navy's Logistic Support System:

- The SANs Logistics Support is based on an integrated management approach over the full life cycle of a product system. Integration is achieved through the application of multi-disciplinary teams. System Management is used to ensure that the life cycle approach is followed.

- Logistics Support capacity must be commensurate with the support requirements of the approved force design in time of war. Spare capacity during peacetime must be utilised to achieve maximum economic benefit.

- Use the widest possible range of industrial support in peace and war to share overhead costs and risk and to increase flexibility.

- Form strategic (long-term) alliances to ensure through life support. This must be implemented in such a manner to generate maximum benefit to the National Economy.

- The minimum own maintenance capability will be Ship, Submarine and Fleet Maintenance Support, where the depth of work to be performed will be determined by the Logistics Engineering process.

- The structure for the logistics supply system must be conducive to high-speed, accuracy and low mass.

- An analytic process based on future availability requirements must drive the sparing approach.

- Data exchange with suppliers and manufacturers must be utilised to support effective sparing.

- Functional specifications will be increasingly used to allow for the use of commercial products and services. This implies an in-house or local capability for high-level system engineering and integration.

- The in-house engineering capability is focused on high level Systems Engineering and Logistics Engineering, feasibility studies, risk abatement, quality management and baseline maintenance.

- Logistics personnel are regarded as the key factor to the successful support of complex weapon systems.

These policy statements and concepts influence the way the SA Navy does its support of ships and submarines.

Budget

The budget allocated to the South African Navy is annually determined as part of the government's Medium Term Expenditure Framework. The SA Navy budget is in the order of RM1,1 annually. It is considered that this amount will remain constant over the foreseeable future and that there will be no major increase in the allocation to the SA Navy. We have set ourselves the target of spending 60% of the budget on personnel expenditure. The balance of the budget (excluding the Capital) is used for all other expenditure such as the maintenance and support of all ships, submarines and equipment.

All this leads to the deduction that the SA Navy will have to optimise the utilisation of the allocated resources it has at its disposal. The optimal use of resources must include all the required functions executed by organisations involved in the support of ships and submarines and include ARMSCOR, the Industry, the Naval Dockyard and the SA Navy's own capabilities.

SA Navy Support Organisation and Capability

The Navy's support organisation is derived from its support concept and over the years we have developed certain capabilities. These capabilities vary in depth over different technological areas. The maintenance levels that the SAN has adopted is pictorially presented in Figure 1. The picture also indicates that in broad terms there are different depths of capabilities in the SA Navy's own organisation. The SA Naval Dockyard in Simon's Town has a stronger capability and capacity to support the platforms of Naval vessels in contrast to Combat Suite where the level of integration and technologically advanced nature of the system preclude the same level of capability.

From this situation it is clear that the SA Navy will have to carefully consider the support of the combat suite portion of the new vessels, as support from the Industry will be required.

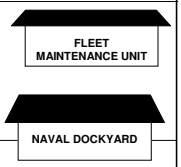
DEPTH OF SUPPORT	SUPPORT DESCRIPTION	PLATFORM (Constructive, Mechanical, Electrical)	COMBAT SUITE (Electronic, Information Systems)
A	MAINTENANCE THAT IS DIRECTLY CONCERNED WITH PREPARING THE ITEM FOR USE AND KEEPING THEM IN DAY-TO-DAY ORDER.		
B	SUPPORT FOCUSES ON ALL MAINTENANCE AND REPAIR ACTIVITIES THAT ARE BEYOND THOSE MAINTENANCE ACTIVITIES IDENTIFIED AS DEPTH A, AND WILL NORMALLY NOT REQUIRE SPECIALISED SKILLS AND SUPPORT RESOURCES		
C	THIS DEPTH OF MAINTENANCE ENSURES THAT THE ITEM IDENTIFIED AS FAULTY DURING DEPTH B MAINTENANCE IS REPAIRED. NTHIS WILL NORMALLY REQUIRE MORE ADVANCED SKILLS AND SUPPORT RESOURCES THAN THE TASKS PERFORMED UNDER DEPTH B.		
D	THAT MAINTENANCE WHICH REQUIRES FULL RECONDITIONING, OVERHAULING, MAJOR CONVERSION, MAJOR REWORK, OR SUCH REPAIR THAT INVOLVES WORK AT THIS DEPTH.		

FIGURE 1 : MAINTENANCE POLICY AND CAPABILITIES

NAVAL DOCKYARD SIMON'S TOWN

The Minister of Defence had instructed to the Secretary of Defence to investigate methodological of operation of the Naval Dockyard in Simon's Town with the view of radically improving the efficiency of the Dockyard. ARMSCOR led a process where consultants studied the position of the Dockyard and made recommendations regarding the possible options within which the Naval Dockyard could operate. These options ranged from keeping the Naval Dockyard in its present situation, ie being a unit of the SA Navy to the privatising of the facility. The Minister of Defence selected the option whereby the Naval Dockyard in Simon's Town would be managed as a subsidiary of ARMSCOR who would then be responsible for its effective operation as a PPP (Public-Public-Partnership). This change should allow the Naval Dockyard to be utilised for the first time for work other than only that of the SANDF, as is the current situation.

ARMSCOR are presently finalising the Dockyard Transfer Agreement (DTA) that should enable the SA Navy, DOD and ARMSCOR to manage the transformation of the Naval Dockyard. With the agreement there will be a Service Delivery Agreement (SDA) that define the principles and the terms and conditions under which the NDS will provide a ship repair and maintenance support to the SA Navy. Several workgroups are working feverishly to conclude the few outstanding matters in order to finalise the DTA and SDA. When these documents have been signed, the transformation of the Naval Dockyard will commence. It is foreseen that this situation will be reached soon and transfer of the Naval Dockyard will commence during the new financial year.

THE CHALLENGE THE SA NAVY IS FACING

The funding available to the SA Navy to support its current Fleet of Ships will not be increased in future to accommodate the newly acquired vessels. We are

therefore confronted with the challenge of attempting to support more vessels with the same budget allocation.

Being confronted with such a challenge, it is clear that the SA Navy is required to reduce the size of its current ageing Fleet. This we are doing. We are already far advanced in the process of reducing the current Fleet by disposing of all ageing and non-essential vessels. The action of reducing the size of the current Fleet in itself will however not solve the problem. Much more needs to be done to confront the challenge. The second measure we are investigating is to ensure that all our support processes and procedures are as cost effective as possible. We can no longer afford to waste one single cent.

A major cost driver in the support of the SA Navy's Fleet of Ships is the contracting of private industry to provide in depth technical upkeep and repair services. This major cost driver was thus the first process that came under the magnifying glass as a possible opportunity by which cost effectiveness could be improved.

Investigations conducted into the costs and effectiveness of current support contracts for combat suite systems and sub-systems on private industry has indicated that an imbalance in the allocation of tasks for the execution of the four main functions required to be executed under these support contracts exists. The four main support functions are:

- Management of work to be executed.
- Maintenance of systems and equipment.
- Logistic information management.
- Procurement of spare parts.

The imbalance is caused by the fact that too great a portion of the tasks allocated to each support contract is for *Management Functions*, as opposed to the real service of value, the *Maintenance of Systems and Equipment*.

The diagram in Figure 2 pictorially illustrates what the current distribution of funds is versus the desired distribution for combat suite contracting.

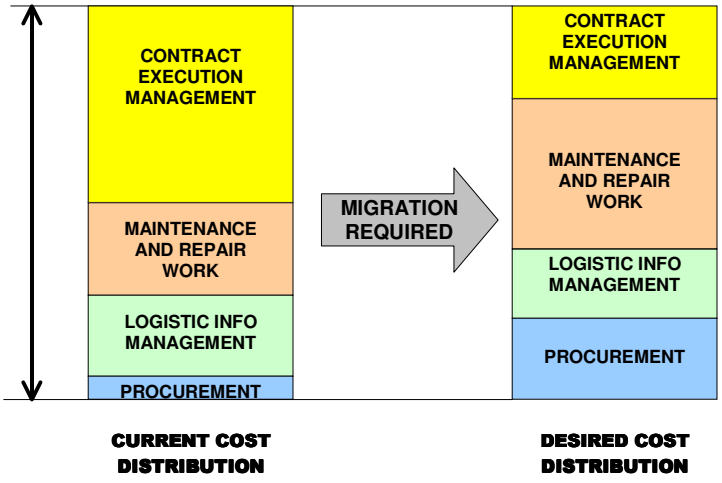


FIGURE 2 : CURRENT CONTRACTED DISTRIBUTION OF FUNDS VERSUS DESIRED DISTRIBUTION

It is clear from Figure 2 that a change is required in the manner in which the SA Navy and Armscor is contracting private industry for in-service support of its Fleet. The change in the manner of contracting is required to achieve the following aims within the constraints of a fixed contracting amount:

- Industry must spend less effort on management and administration and more on maintenance and repair work, without an increase in the contract price.
- The Navy needs to rely to a greater degree on industry to assist with the procurement of ready-use spare parts in an attempt to improve the availability of spare parts.
- Turn-around time to repair defective systems needs to be improved.
- Substantially more technical maintenance and repair work must be executed without an increase in the overall cost of support contracts.

To achieve these aims, a different form of contracting is to be found with the Navy taking over a share of the management role and also making its support infrastructure, test equipment and technical staff available to be shared by industry in an attempt to save costs. This implies that a form of collaboration between industry and the SA Navy is required.

Figure 3 illustrates the current "silo" approach that is being followed, in contracting the support of industry, versus the desired collaborative approach required.

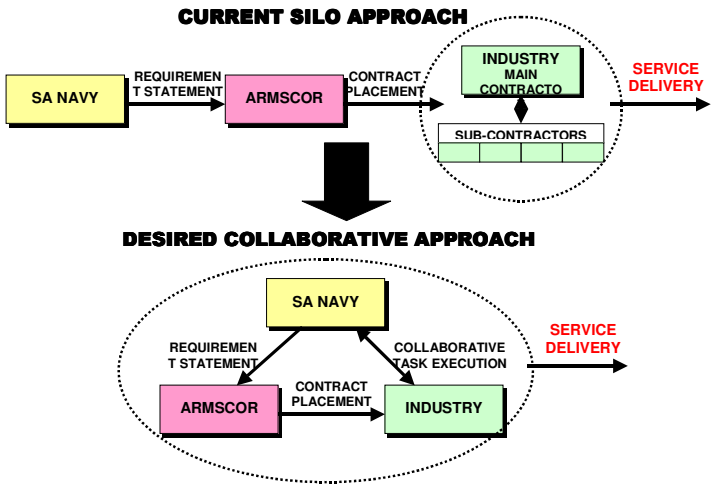


FIGURE 3 : DESIRE TO MOVE TO A COLLABORATIVE APPROACH

The current approach is based on industry taking full responsibility, risks included, for delivering the support services required. The desired approach is based upon a model of collaboration whereby the support service is delivered by a team comprising the Navy, Armscor and Industry, operating as partners.

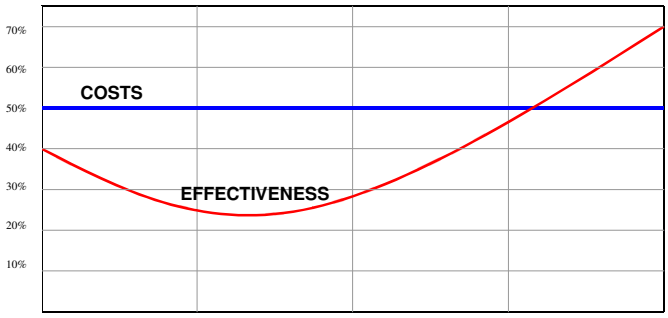
Under such a model risks and infrastructure will be shared. This should lead to a substantial reduction in costs to the State. To implement such a collaborative approach necessitates a deviation from the current ways of contracting the services of industry.

The question posed however, is to which form of contracting model should we migrate in order to maximize output and effectiveness within the budget allocation?

CONTRACTING MODELS INVESTIGATED FOR COMBAT SUITE SYSTEMS

Several different contracting models were investigated for combat suite systems, with inputs from industry and the experience of other Navies. The different models investigated during the study were grouped under what we referred to as Model 1. Model 2, et cetera. These models were evaluated against each other in terms of cost against effectiveness achievable. Effectiveness measurement parameters were based mainly on quantity of output and quality of service delivery.

The results of the investigations are illustrated under Figure 4. The diagram in Figure 3 shows four different contracting models, ranging from Model 1 through to Model 4, against a graph showing the relative effectiveness that could be expected for the same amount of money.



MODEL 1	MODEL 2	MODEL 3	MODEL 4
- ARMSCOR ACTS SERVICE PROVIDER, PLACING DIFFERENT CONTRACTS ON SUB-CONTRACTORS. - OLD MODEL	- SINGLE INDUSTRY COMPANY APPOINTED AS MAIN CONTRACTOR. PLACES ORDERS ON SUB-CONTRACTORS - CURRENT MODEL	- GROUP OF COMPANIES OPERATING IN A CONSORTIUM OR PARTNERSHIP. - A POSSIBLE MIGRATION MODEL.	- GROUP OF COMPANIES OPERATING IN PARTNERSHIP WITH NAVY & ARMSCOR. - FUTURE MODEL FAVOURED BY SA NAVY.

FIGURE 4 : COST EFFECTIVENESS COMPARISON OF DIFFERENT CONTRACTING MODELS

From the results of the investigation it is clear that if the SA Navy needs to improve cost effectiveness, we need to move towards Model 4, a collaborative form of contracting, as soon as possible.

The migration from Model 2, the current approach, to Model 4, the desired approach, will pose challenges. Vested interests that could be threatened and the resistance to change from the known to the unknown are all soft issues that will surface during such a migration process. We therefore do not expect the migration process to run smoothly. What is required in essence is a change in mindset of all role players ie the SA Navy, Armscor and amongst Industry.

DESCRIPTION OF THE DESIRED COLLABORATIVE MODEL

What is desired is the establishment of a "Support Centre" on the premises of the SA Navy capable of providing the much needed support required from industry. Such a "Support Centre" is to provide the Depth C support services required on site. The diagram in Figure 5 illustrates where such a "*Support Centre*" would fit into the overall Navy support organisation.

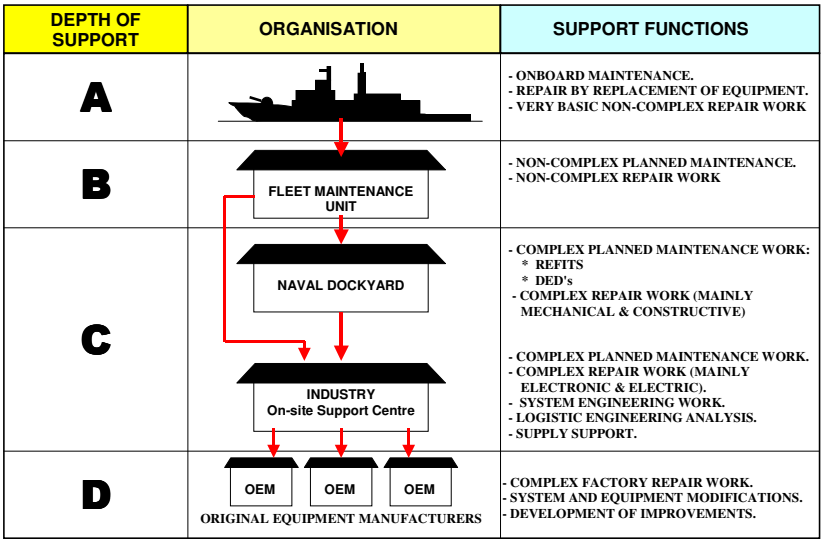


FIGURE 5 : COLLABORATIVE SUPPORT ORGANISATION THAT INCLUDES INDUSTRY

It is to be noted form Figure 5 that the desired "*Support Centre*" will form an integral part of the SA Navy's support to ensure that all levels of support is provided seamlessly.

The desired "*Support Centre*" will be resourced by staff from Industry, but should also include a number of personnel of the SA Navy, Dockyard and Armscor.

The "*Support Centre*" will be geared to execute on-site Depth C support work as summarised in Figure 5.

The Depth D work will out of necessity be executed off-site by the Original Equipment Manufacturers (OEM's). The liaison between the "*Support Centre*" and the OEM's will be through back-to-back agreements between the industry members partaking in the "Support Centre" and the appropriate OEM's.

The functioning of the desired "*Support Centre*" is explained by means of Figure 6, which is a magnified view of the *On-site Support Centre* shown in Figure 5.

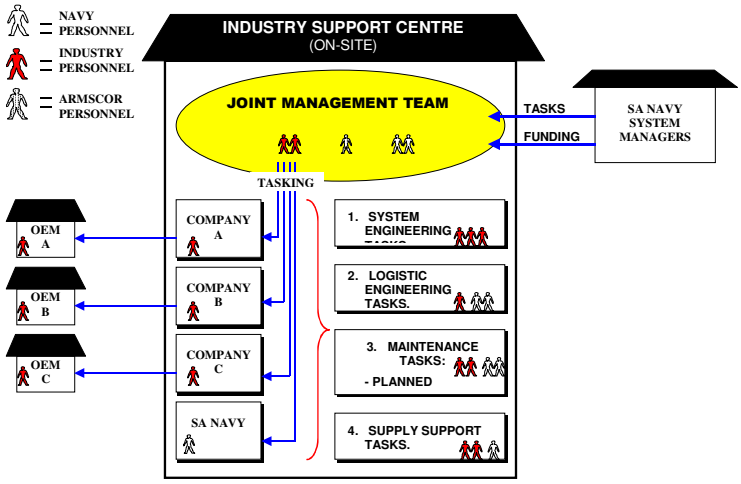


FIGURE 6 : ILLUSTRATION OF COLABORATIVE SUPPORT CENTRE DESIRED

It is foreseen that the management of the execution of the support services to be delivered will be done by a Joint Management Team (JMT) comprising members from Industry, the SA Navy and Armscor, each focusing on its own speciality. The Joint Management Team will in effect act as the "main contractor" responsible for delivering the support services required.

Due to the management function being shared, it is automatically implied that the management of risks will be shared as well. The sharing of risks in itself will lead to a reduction in costs to the State, in comparison with the costs of current contracting models. The SA Navy is prepared to judiciously share these risks.

The concept is that the SA Navy, Industry and Armscor will operate as partners in this model. It is therefore envisaged that the main support functions will be executed by teams comprising members of the three organisations. The tasking of the teams will be done by the JMT. Cost and expenditure control will therefore be managed and administered by the JMT.

The tasking of the Support Centre, and the determination of priorities of tasks, will be done by the existing System Managers of the SA Navy, who will also be responsible for the budgeting for the support services required.

The main support functions or tasks that are expected to be executed by Industry under the proposed collaborative model are:

- System Engineering Work: Involving technical studies into improvements to systems as well as into system level problems existing. The design and development of engineering improvements will also be done if and when funding allows.

- Logistic Engineering Work: Involving the collection of reliability, failure causes and spare part consumption data to enable the prediction of future trends for budgeting purposes.

- Planned Maintenance: Involving the execution of regular preventative maintenance routines to ensure continuous operational availability of the vessel systems.

- Corrective Maintenance: The rapid fixing of failures of systems and equipment that may occur during the operational deployment of vessels.

- Supply Support: Involving the procurement and stock-holding of ready-use spare parts that are expected to be required at short notice at regular intervals.

PRINCIPLES AND BENEFITS OF A COLLABORATIVE APPROACH

The benefits that are expected to be derived from such a proposed collaborative arrangement are numerous. The following are just a few examples of benefits that could be derived that are not visible under the current method of contracting Industry:

- The effort Industry needs to devote to the management of support work will be reduced since the Navy and Armscor will execute some of these functions. Less money will therefore be spent on non-core management activities, leaving more funds available for core activities, ie the technical support of more systems.
- Turn-around times to repair a larger variety of defective systems will improve radically since Industry will be available on-site, eliminating time consuming transportation of equipment within remote centres in South Africa.
- A considerable saving is expected with the SA Navy making its support facilities and infrastructure available to Industry to share. This saving could then be used to support more systems that what is currently the case.
- No duplication of effort will take place between the different companies participating in the proposed collaborative arrangement. This will in itself lead to a small saving that could be used to support more systems.
- No financial provision for risk reduction by Industry will be necessary, resulting in a considerable saving. This saving could then be ploughed back to support more systems.

The collective savings derived from all above is expected to range between 20% and 30% in comparison with the current way of contracting support services. The British and Australian navies claim to have derived savings in excess of these figures after migrating towards collaborative models.

Industry may well ask what benefits are there for them, because the above listed benefits appear to be all to the benefit of the Navy only. The answer to this question is simply: If we do not migrate together to a more cost effective model, there will not be enough funds to contract Industry at all. The choice therefore lies simply between some work or no work.

CONCLUSION

The SA Navy is taking into their inventory, four new Corvettes and three new submarines. We in the Navy have the obligation to do this as cost effectively as

possible. Our internal investigation, done in conjunction with role players in the defence industry, had indicated that possibilities exist in terms of reviewing the way we contract to increase the effective use of resources. The SA Navy intends to take this investigation further with the view developing the model to a point where it can be implemented.

It is an exiting time that we in the Navy are experiencing now and we are committed to keeping the new equipment we are receiving in the best material state possible within the means to our disposal to be able to provide the maritime defence South Africa deserves.

I thank you for your attention.

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[i] Ripley, T., UK details £6bn cuts package, Janes Defence Weekly, 17 November 2004, pp13
[ii] Notes taken by R Adm (JG) J.C. Visser at the 'Euronaval 2004 Conference', Paris October 2004.
[iii] DLO Website
[iv] Notes taken by R Adm (JG) J.C. Visser at the 'Euronaval 2004 Conference', Paris October 2004.
[v] SA Navy General Regulations Publication SANGP 1D, Chapter 15, Section 2.