CENTRE FOR LAND WARFARE STUDIES (CLAWS)
WORKSHOP ON
DEFENCE ACQUISITION
11-13 OCTOBER 2011

General

A workshop on Defence Acquisition was organised at the CLAWS Campus from 11-13 October 2011. Prof DT Tripp and Prof Gregory Beckham from the Defence Acquisition University, USA presented several modules on the subject. The other speakers included Maj Gen NS Vidyarthi, Technical Manager (Land Systems), Maj Gen BS Yadav (Retd), Cmde Sujeet Samaddar, NM, Vice President (Defence), Tata Group and Col Dhiraj Seth, WE Dte. The workshop was attended by officers from the three Service HQs and representatives from the defence industry.

Welcome Remarks: Maj Gen Dhruv C Katoch, SM, VSM (Retd), Additional Director, CLAWS

India's geo strategic environment makes it incumbent for India to be prepared to face diverse security challenges. These would perforce require the Armed Forces to be well armed and equipped. This is where acquisition comes in. We need to ensure that our procedures are processes result in the best possible deals for the vast sums of money being expended.

We are fortunate to have two experts from the US Defence Acquisition University with us to present acquisition procedures as followed in the US. I extend to both Prof DT Tripp and Prof George Beckham a very warm welcome and thank them for taking time out to come for this symposium all the way from the US on our request.I am certain that the deliberations over next three days will be useful to all the participants.

Introduction and Overview: Macro Acquisition- Requirements and Development- Mr DT Tripp

Defence Acquisition University (DAU) has been created by U.S. law to train and certify functional specialists to manage acquisition across the Department of Defense. The faculty of the University is composed ofSubject Matter Experts (SMEs) with years of experience in acquisition career fields that teach, consult, and moderate functional area discussions.We are here to share and learn about acquisition system and process of U.S. to meet military needs. We would also aim to provide an overview of the various U.S. acquisition functional areas.

The Department of Defense's conventional modernisation programmes seek a 99 per cent solution over a period of years. Stability and counterinsurgency missions require 75 per cent solutions over a period of months. Key security challenges for US include violent extremist movements, the spread of weapons of mass destruction, rising powers with sophisticated weapons, failed or failing states and increasing encroachment across

the global commons (sea, space, and cyberspace). US strategy must also increasingly account for a series of powerful trends that are reshaping the international landscape and will dramatically complicate the exercise of American statecraft and overseas relations. The United States continues to work in cooperation with Allies and partners to achieve strategic goals. The US security environment dictates that a balance has to be struck between versatile, joint systems and systems optimised for service missions. A balance also has to be struck between ambitious requirements and achievable acquisition strategy.

In order to optimise defence acquisition, we need to ensure that the performance requirements defined by the war fighter are feasible using available or developing technologies. We have to be realistic about the amount of technological risk we are assuming. The requirement must have an affordable solution. If it is too expensive, chances are that we'll never get it in the quantities we need. The system must be delivered on time. An overly complex or rigid requirement can result in a system that's late-to-need and may well be useless. Most importantly, we need to make sure the requirement meets the needs of the combatant commanders.

US Acquisition Process Framework, International Dimension of Programme Management: Offsets and Foreign Military Sales- Mr Gregory Beckham

U.S. acquisition framework includes MaterielSolutionAnalysis (MSA), Technology Development (TD), Engineering and Manufacturing Development, Production & Deployment culminating into Operations &Support. In US, Defense Acquisition Management Systemis closely linked to Joint Capabilities Integration and Development System(JCIDs). The Materiel Development Decision precedes entry into any phase of the acquisition management system. Following the Materiel Development Decision (MDD), the Milestone Decision Authority (MDA) may authorise entry into the acquisition management system at any point consistent with phase-specific entrance criteria and statutory requirements. Entrance criteria are met before entering this phase. There are two strategy approaches to full capability namely Evolutionary and Single-step. Particular approach chosen depends on availability of time-phased capabilities in the Capability Development Document (CDD), technology maturity, cost/ benefit of incremental fielding vs. single step and cost of fielding multiple configurations. Acquisition strategy shall address chosen approach based on above mentioned considerations.

Evolutionary acquisition is the preferred strategy for rapid acquisition of matured technology. In Evolutionary Acquisition the capability is delivered in increments, recognising up front need for future capability improvements. Each increment depends on mature technology which is a militarily useful and supportable operational capability. Successive Technology Development phases may be needed to mature technology for multiple increments.

Materiel Solution Analysis (MSA) aims to assess potential materiel solutions for procurement. MSA conducts Analysis of Alternatives (AoA), develops Technology

Development Strategy (TDS) & drafts Capability Development Document (CDD). The end product is a materiel solution capability need in Initial Capabilities Document recommended by lead component conducting AoA, and phase-specific exit criteria have been satisfied. Major MSA products include AoA, materiel solution,TDS, preliminary System Specification, Systems Engineering Plan (SEP) test and Evaluation Strategy (TES).

Technology Development (TD) aims to reduce technology risk, demonstrates critical technology through competitive prototyping and complete preliminary design. At the end of technological development cycle affordable increment of military-useful capability has been identified. The technological development also ensures that the technology is demonstrated in relevant environment and manufacturingrisks have been identified. The technological development also ensures that the system or incrementis ready for production within short time frame (normally less than 5 years for weapon systems). The major products of TD include Prototypesin the form of system or subsystem demonstrating feasibility of critical technologies.The products of TD also include acquisition strategy,system performance specification, systemsallocated, baselinetest and evaluation master plan, system risk assessment and initial product support strategy.

Engineering and Manufacturing Development (EMD) aims to develop a system or increment of capability leading to development of an affordable manufacturing process with minimum logistics footprint. At the end of the process the system is demonstrated in intended environment using production-representative articles. EMD‘s major products include integrated system design system capability & manufacturing process demonstration. Production & Deployment aims to achieve an operational capability that satisfies mission needs and is deemed to be completed when fully operational capability has been achieved and the deployment is complete.Operations & support process intends to execute a support program that meets materiel readiness and operational support performance requirements, and sustains the system in the most cost-effective manner over its total life cycle.

Guidance for the Employment of the Force (GEF) consolidates previously separate documents, including the Contingency Planning Guidance, Global Posture Guidance, Global Force Management Guidance, Nuclear Weapons Planning Guidance, and the Security Cooperation Guidance. Security Cooperation is now an integral part of the DoD strategic planning process and is articulated in the GEF.

The major players of the process include Congress, State Department “Title 22” and Defence Department “Title 10”. The Congress authorises programs and appropriates funding and exercises oversight. State Department “Title 22” determines which countries can have programs and determines which sales, leases and transfers will be made. It also issues export licenses for commercial sales and determines foreign assistance funding levels. Defense Department “Title 10” has extensive input on security cooperation policy and implements Foreign Military Sales (FMS) Programme,

Foreign Military Financing Program (FMF) and other funding. Under Secretary of Defence for Policy/Partnership Strategy is DoD's focal point for security cooperation.
An international cooperative program is any acquisition programme or technology project that includes participation by one or more foreign nations, through an international agreement, during any phase of a system's life cycle. A group of programs authorised by the Foreign Assistance Act (FAA) and the Arms Export Control Act (AECA) or other related statutes by which the US provides defense articles, military training, and other defense related services, by grant, loan, cash sale, or lease, in furtherance of national policies and objectives. The security assistance by US includes FM), FMF and International Military Education and Training.

FMS are foreign funds (or grants) through the US Foreign Military Financing (FMF) Programfor purchase of U.S. defence articles or services through the U.S. Government via Letter of Offer and Acceptance (LOA).Foreign Military Financing Program (FMFP) are appropriated program providing grants and loans to specific countries to enable purchase of U.S. defence articles, services, and training through either FMS or Direct Commercial sales(DCS) channels .International Military Education and Training (IMET) is professional military or technical training through grants for foreign military and civilian defense personnel . The purchaser has the option to buy through DCS or FMS channels which has its own pros and cons. As per US offset policy USG shall not encourage or commit U.S. firms to offsets companies responsible for offset negotiations.USG funds (grant funds) shall not finance offsets. Offset description will be included with Congressional notification only.

Financial Management: Production and Manufacturing Management- Mr DT Tripp

Three major DoD management systems include Requirements (JCIDS), Budget (PPBE) and DefenseAcquisitionSystem (DAS). PPBE stands for Planning, Programming, Budgeting, and Execution. PPBE is the primary resource management system for DoD which articulates strategy, identifies size, structure and equipment for military forces. PPBE also sets programming priorities,allocates resources and evaluates actual output against planned performance and adjusts resources as appropriate. Future Years Defense Program (FYDP) lays the foundation of the PPBE which is a computerised database which summarises the force structure, personnelstrength and financial resources. FYDP contains 11 years of data.The data contained in the FYDP is organized in three different ways namely DOD appropriation categories, major force programs (MFPs) and components (Services & Agencies).

DoD Appropriation Categories are major funding classes by which Congress provides funds.FYDP tracks the DOD funds by Appropriation category to align the President's Federal Budget with the Congressional appropriations. Each appropriation category may include funding for different services or Major Force Programs (MFPs).Military Personnel (MILPERS)appropriation category funds include pay and allowances of active duty and reserve military personnel ,Permanent Change of Station (PCS) moves ,training in conjunction with PCS moves ,subsistence ,bonuses and retired pay accrual .

The Procurement appropriation category funds include purchase of major end items and defense systems, initial issue of spares for above items. It also includes all costs necessary to deliver a useful end item intended for operational use or inventory. The RDT&E appropriation category funds cater funds for Development of equipment, material, or computer application software, Development Test and Evaluation (DT&E), Initial OperationalTestandEvaluation (IOT&E) and Operation costs for some R&D dedicated installations.

Military Construction (MILCON) includes funds for major military construction projects such as Construction of military schools, facilities and bases. Each appropriation has a legal time limit, or obligation period, within which funds can be obligated (i.e., put on contract). The FYDP tracks funds for each of the three military services and other DOD agencies that request funding through the DOD PPBE process. Each data set may contain funding from different appropriation categories and different Major Force Programs (MFPs).

The enactment process of contract is completed after Congressional Review of President's Budget .After the President's Budget is submitted to Congress, three basic activities must be completed are budget resolution , authorisation bill and appropriation bill. Each activity has a specific objective and should be completed before the new fiscal year begins.

All military departments and defense agencies perform Life Cycle Cost Estimates (LCCE) for their acquisition programs.LCCE is a very comprehensive estimate which tries to identify all the costs from programme initiation through disposal of the system from the inventory. It can span decades.Life cycle cost is the total cost to the government for a system over its entire life. Life cycle cost includesResearch and Development, investment covering production and facilities, its operations, maintenance, environmental Concerns and its disposal.The primary purpose of LCCE is to serve as the cost input for decisions on whether to start, continue, modify, or terminatedevelopment, production, and fielding of a system. It also provides the basis for budget requests to US Congress. Life cycle cost includes all costs of a programme. Life Cycle Cost of an acquisition program are broken down in to Appropriation, Work Breakdown and Life Cycle Cost categories. Appropriation categories are types of funds used by the Government (Congress) and consist of Research, Development, Test, and Evaluation (RDT&E), Procurement, Operations and Maintenance (O&M) Military Construction and Military Personnel.They are necessary to develop internal budgets and submit budget requests to Congress. Work Breakdown Structure (WBS) is an organized method to break down a project into logical subdivisions at lower and lower levels of detail. A detailed Life Cycle Cost Estimate (LCCE) uses the WBS to aggregate and show costs by system and subsystem.R&D costs include all the costs associated with the research and development phases (i.e., Concept and Technology Development and System Development and Demonstration). It also includes cost of the investment phase (i.e., Production and any Facilities costs associated with the system). The total cost of procuring the prime equipment, its related support equipment, facilities, initial spares, and fielding of the system. Operational & Support (O&S) costs include all

costs incurred in using the system such as personnel, fuel, maintenance (unit and depot), sustaining investment (replenishment spares) and training. Disposal costs include the cost to dispose of the system after its useful life. Disposal costs are costs associated with disposing of the materiel system and include environmental and related costs. There are three widely used cost estimating methods namelyAnalogy, Parametric, Engineering and Actual Costs. In the analogy method the cost is compared with a similar system. This method is quick, inexpensive and easy to change. For example, the Depot Support Facility for the previous aircraft engine program cost $10Million. The Depot Support Facility for the new engine being developed needs to be 20 percent larger. Using the cost of the previous facility, add 20 percent for the increased size, and compensate for inflation to determine what the new facility would cost.

Parametric method is a system of statistical analysis which uses Cost Estimating Relationships (CER) to estimate the costs. It uses relationship between performance, parameter and cost (i.e. speed, thrust, weight, etc.) of an item to estimate the costs.Engineeringmethod of cost estimate is “Bottom up” estimate. It involves detailed breakdown of material and labor.This method is a very accurate in later stages of development since it has limited subjectivity. The actual cost method involves extrapolation of actual costs incurred. This method has little subjectivity and is very accurate. It is impertinent to mention that in financial spending terminology, the words are important, hence, we have to be very careful.

DAY II

Contracting- Mr DT Tripp

Contract establishes legal relationship between two parties, defines rights and responsibilities of each party. It also allows for changes within terms and conditions of legal relationship. However, it requires five essential elements to be binding, specifically,

- Offer must be communicated, be clear and unambiguous and have complete terms (price, quantity, quality, and delivery requirements)
- Acceptance must be timely, clear and unequivocal;
- Consideration. There should be a promise to perform.
- Objective or purpose needs to be legal to be enforced in court.
- Both parties must be legally competent for a contract to be binding.

The Federal Acquisition Regulation System establishes policies and procedures for acquisition by all Executive Agencies and it consists of Federal Acquisition Regulation (FAR), The DOD FAR Supplement and Agency supplements and acquisition regulations.

Program Manager (PM) is responsible for the overall responsibility for bringing the program in on time and within budget. The Contracting Officer (CO/KO) is the business

advisor to the PM and is responsible for ensuring that all acquisition laws and regulations are followed.

The two primary methods of contracting are Sealed Bidding or Contracting by Negotiation. Sealed Bidding is based on price and other price-related factors and a Discussion is not necessary. The Bottom line is that there is a reasonable expectation of competition (more than one sealed bid). Sealed Bidding is rigid & inflexible and must meet all of the following:

- Firm Specifications. Free of ambiguities, firm, and not susceptible to unnecessary and frequent change.
- Adequate Competition. Need an adequate source of supply and a sufficient number of suppliers, who indicate an interest
- Adequate Time. There must be ample lead time from the receipt of the requirement to the delivery date of supplies/services, price is adequate criteria and if technical discussion is required, the sealed bid method cannot be used.

The following factors are considered in in selecting Contract Type:
- Type and Complexity of the Requirement
- Urgency of the Requirement
- Period of Performance
- Effective Price Competition
- Price Analysis
- Cost Analysis
- Contractors Technical Capability and Financial Responsibility

Once the Pre-Solicitation Phase has been completed, the focus shifts to soliciting bids or proposals, evaluating them, and finally awarding a contract. Before offers are solicited from industry, the needs that were identified by the requirements package must be advertised to determine which companies are interested.

The solicitation communicates the capability need to industry. The method of contracting determines the method of solicitation:
- An Invitation for Bid (IFB) if using Sealed Bidding.
- A Request for Proposal (RFP) if Contracting by Negotiation.

Both types of solicitation (IFB and RFP) use the Uniform Contract Format (UCF).
An IFB is the method of solicitation for Sealed Bidding. This IFB is sent to businesses that request a copy of the solicitation. The requests usually result from the synopsis published in the Fed Biz Ops (FBO), a government point-of entry (GPE) website for Federal government procurement opportunities over $25,000. If the business completes the IFB and sends it to the contracting office, it is considered an offer and called a bid.

An RFP is the method of solicitation for Contracting by Negotiation. This RFP is sent to businesses that request a copy of the solicitation. The requests usually result from the

synopsis published in the CBD/FBO. If the business completes the RFP and sends it to the contracting office, it is considered an offer and called a proposal.

Both IFB and RFP use the UCF. The UCF is a standardized format for preparing solicitations. It includes a table of contents for the solicitation in 13 sections (A through M). It has four parts. Before a solicitation can be issued, the requirement must be advertised in the FBO (unless exempt). After issuing the solicitation, the responses received from industry are called offers.

In systems acquisition, a formal source selection process is normally used because of the high-dollar value of the acquisitions. The Contracting Officer is responsible for the contracting process, but normally does not select the source for contract award. The steps for evaluation and selection are:

- Compare each proposal to the RFP.
- Perform comparative analysis.
- Select the source for contract award.
- Determine if the price is fair and reasonable.

The Contracting Officer has many responsibilities throughout the source selection process. These include:

- Ensuring that the source selection process complies with procurement laws and regulations.
- Providing the proposals to the Source Selection Evaluation Board (SSEB) for evaluation.
- Reviewing the proposals to ensure the offerors (bidders) complied with all the requirements of the solicitation.
- Communicating with Offeror.

The role of the Source Selection Evaluation Board is to:

- Evaluate proposals against the requirements in the RFP and rate each proposal against the requirements in the RFP and rate each proposal using the evaluation factors of Section M of the RFP.
- Identify weaknesses/significant weaknesses.
- Identify any deficiency found.

The CO establishes the competitive range based on the evaluation by the SSEB.
The SSA oversees the source selection process and selects the source or sources whose proposal is the best value to the Government. The SSA is responsible for the integrity of the process and for ensuring that qualified personnel are appointed to the SSEB and the SSAC.

When requested, the SSAC performs a comparative analysis of the SSEB's evaluation of each proposal. The SSAC then forwards a recommendation to the Source Selection Authority (SSA). The functions of the SSAC may be assigned to the SSEB, eliminating the need for a separate SSAC.

During the source selection process leading up to contract award, the CO determines if the selected offeror's price is fair and reasonable. The CO does this by performing a price analysis, or if a price analysis is not sufficient, a cost analysis to help determine if the price is fair and reasonable.

The role of Contract Administration is to manage government interests, monitor contractor processes, ensure contractor is paid and provide program support. Also, the purpose of Contract Administration is to protect the government's interests, avoid or eliminate overlapping and duplication of Government administration effort and provide consistent treatment of contractors in administration of Government contracts.

Logistics, Test and Evaluation- Mr Gregory Beckham

Life-Cycle logistics (LCL) is the planning, development, implementation, and management of a comprehensive, affordable, and effective systems support strategy. LCL includes the integrated activities of acquisition logistics and those activities referred to as sustainment logistics.

Acquisition logistics is a multi-functional technical management discipline associated with the design, development, testing, production, fielding, deployment, sustainment, and improvement/modification. It deals with cost-effective systems that achieve the user's peacetime and wartime readiness capability needs.

It is important to ensure that the system is designed for supportability (or consider supportability as a selection criterion for off-the-shelf purchases). Another important factor is to consider supportability to be a performance parameter, design the support infrastructure and make sure that the necessary support structure is in place when the system is fielded.

A support structure includes the people, facilities, processes, tools, parts, etc., required to operate and maintain a system after it has been deployed. Supportability is the degree to which system design characteristics and planned logistics resources, including manpower, meet system peacetime readiness and wartime utilisation requirements.

The goal of supportability is to increase system capability through:

- Reducing ownership costs.
- Increasing readiness through reliability, maintainability, and availability improvements.
- Managing the logistics footprint.
- Reducing dependence on spares.
- Requiring fewer support personnel.

Support costs can be reduced by:

- Addressing supportability considerations up front in the design process as part of the overall Systems Engineering effort.
- Employing Systems Engineering processes to improve reliability, availability, and maintainability.
- Functioning in an Integrated Product and Process Development (IPPD) environment.

There is a pivotal relationship between Logistics and “RAM” as described below:

- **Reliability.** The probability that an item will perform its intended function under stated conditions for either a specified interval or over its useful life.
- **Availability.** It is a measure of the degree to which an item is in an operable and committable state at the start of a mission when the mission is called for at a random time.
- **Maintainability.** It is the measure of an item’s ability to be retained in, or restored to, a specified condition when maintenance is performed by skilled personnel using the correct procedures and resources.

Design Interface ensures that there is a relationship between the design parameters such as Reliability & Maintainability, and readiness & support requirements; For example, the acquisition logistician would ensure that the design interface for a UHF antenna allows for easy mounting and maintenance of the item. The early focus of design interface should result in the establishment of support-related design parameters (e.g., MTBF and MTTR, which are quantitative or qualitative for things like human factors which are expressed in operational terms.

The purpose of maintenance planning is to ensure that the system can be maintained effectively and economically at the desired level of readiness after it is placed into operational use. Maintenance planning specified where, when, and how maintenance tasks will be performed on the system and includes preventive maintenance and corrective maintenance (repair).

Training & training devices includes the processes, procedures, techniques, and equipment used to train military and civilian personnel to operate and support the system. Training planning starts with the development of a training concept that should answer the questions:

- Who will be the operators, maintainers, and support personnel?
- What are the critical tasks that must be trained?
- When must training start to ensure that trained people are in place when the system is fielded?
- Where will this training occur (including geographical location and kinds of facilities)?
- How will the training be accomplished?

PHS&T includes the resources, processes, procedures, design considerations and methods to ensure that the system, equipment, and support items are properly packaged and preserved, stored, and transported.

- Emphasis is on avoidance of damage or deterioration in the safe and timely movement and storage of systems.
- New systems should be designed to utilize standard DoD transport equipment.
- A certificate of transportability must be obtained by the Program Manager to ensure the system meets DoD transportability requirements for weight, cube, and overall dimensions.

The facilities constitute all permanent or semi-permanent real property assets required to support a system, including major modifications of existing structures.

- System design should strive to minimize or eliminate the facilities required to operate and support a defense system.
- Where facilities are demonstrated to be absolutely needed, maximising the use of existing facilities should be considered.
- Facilities must be considered very early in the acquisition process. If military construction (milcon) funding is necessary, the lead time for funding may be 4-7 years.

Acquisition logistics is a complex subset of the total DoD Logistics structure. Acquisition Logisticians help design system support elements to lower lifetime costs while delivering improved wartime capability. Acquisition effectiveness relies on synergy between RAM data, understanding support element relationships, and good Logistics management at the weapon system level.

Test & Evaluation (T&E)

T&E is the principal tool to measure progress in system development and is conducted to facilitate learning, assess technical maturity and interoperability. It facilitates integration into fielded forces, confirms performance and reduces risk.

It helps in determining types and quantity of data to be collected, estimating the anticipated test risks/results through modeling and simulations, establishing safe test procedures, ensuring environmental protections are in place and projecting resource and schedule requirements.

Following are the T&E Customers:

- Acquisition Managers
    - Evaluate the program for risk management
    - Determine system performance thresholds
    - Determine if the system has the potential to meet objectives
- Designers/Engineers
    - Evaluate system design and performance
    - Identify if design changes are needed
    - Provide feedback into the Systems Engineering Process
    - Update Modeling & Simulation
- End Users

- Learn how the system performs under operational conditions
- Improve tactics and warfighting capabilities
- Obtain information to help plan for training and logistics support
- Understand full performance envelope and capabilities

There are two types of testing: DT&E and OT&E

DT&E includes the following purpose:

- Identifies technical capabilities and limitations of alternative concepts and design options under consideration
- Stresses the system to ensure robust design
- Assesses progress toward meeting critical technical parameters
- Provides data and analysis to support the decision to certify the system is safe and ready for operational test and evaluation

OT&E consists of field tests conducted under realistic operational conditions of any item (or key component) of weapons, equipment, or munitions to:

- Determine the effectiveness and suitability of the systems for use in combat by typical military users
- Provide decision makers with an evaluation of such test results

DOD preferred management technique is the Integrated Product and Process Development (IPPD). IPPD simultaneously integrates all essential acquisition activities (business, managerial, technical) through use of multidisciplinary teams to optimize design, manufacturing, and supportability processes. It also ensures balanced system that meets user's operational needs. SE is the technical component of IPPD, which is the overarching process applied to transition from a stated capability need to an operationally effective and suitable system.

Systems Engineering Process (SEP) Transforms operational/ requirements into an integrated system design solution through concurrent consideration of all life-cycle needs. It ensures the compatibility, interoperability, and integration of all functional and physical interfaces and makes sure that the system definition and design reflect the requirements for all system elements.

DoD has defined a set of technical processes which are listed in the current Defense Acquisition Guidebook, where each is explained in detail. These processes are the focus of technical management in acquisition programs; these are the processes that must be managed successfully to develop new defense capabilities. The technical processes that must be managed are:

- Stakeholder Requirements Definition
- Requirements Analysis
- Architecture Design
- Implementation
- Integration

- Verification
- Validation
- Transition

In peacetime, technological superiority is a key to conflict deterrence. During crisis, technological superiority provides a wide range of options to the combatant commanders, while providing confidence to our allies. However, in war, technological superiority enhances combat effectiveness, reduces casualties, and minimises equipment loss. Technology transition is a function/goal of the Systems Engineering Process.

The Defense Science and Technology program:

- Needs to be grounded in a deep understanding of fundamental science and technology
- Uses this understanding to create new military capabilities to counter security threats
- Responds to what the war fighters need
- Does not duplicate what the commercial marketplace can produce cheaper and faster

Program Financial Management Terms, Life-Cycle Cost & Estimating: Mr Gregory Beckham

There are five core Financial Spending Terminologies that need to be understood comprehensively before deliberating upon the more complex issues of defence acquisition. Following are the terminologies:

Budget Authority

- When you applied for your first credit card, the credit card company checked your credit rating and determined if you were a good credit risk. The company then issued you a card with a spending limit.
- This spending limit is similar to the Budget Authority provided by Congress for a program. Congress approves a certain amount of Budget Authority. This is the amount you can obligate on your program.
- Budget Authority is the authority granted by appropriation law to enter into obligations that will result in immediate or future outlays.

Commitment

- When you use your credit card, the store cashier swipes the card to verify that you have a valid card and are within your spending limit.

- In the program office, prior to releasing a Request for Proposal (RFP), the comptroller must verify that you have sufficient Budget Authority in the correct appropriation and fiscal year.
- A commitment is an administrative reservation of funds.

Obligation

- When you sign the credit card slip, you have really "purchased" the item. Once you sign, you are legally obligated to pay the bill for that item.
- In the acquisition process, when the local Procuring Contract Officer (PCO) signs a contract, an obligation is created and the Government is legally liable to pay for those goods or services.
- An obligation is a legal reservation of funds.

Expenditure

- When you receive a credit card bill, you must pay it. You write a check or instruct your bank to transfer the funds.
- When the contractor sends the Government an invoice for goods or services provided, the paying office verifies the invoice and prepares payment, then sends a "check" to the contractor.
- An expenditure is the issuance of a Government check.

Outlay

- When your check clears your bank, you have an actual outlay of funds.
- In the Government, when the check clears the Treasury Department and funds are actually paid out, there is an outlay of Government funds.

Life Cycle Cost Estimates (LCCE)

All military departments and defense agencies perform Life Cycle Cost Estimates (LCCE) for their acquisition programs. An LCCE:

- Is a very comprehensive estimate.
- Tries to identify all the costs from program initiation through disposal of the system from the inventory.
- Can span decades.

When making programmatic decisions about a system, an important concept to consider is Life Cycle Cost. Life Cycle Cost is the total cost to the Government for a system over its entire life. Life Cycle Cost includes:

- Research and Development
- Investment (Production and Facilities)
- Operations

- Maintenance
- Environmental Concerns
- Disposal

Life Cycle Cost Estimates (LCCE) have two primary purposes:

- Serve as the cost input for decisions on whether to start, continue, modify, or terminate development, production, and fielding of a system.
- Provide the basis for budget requests to Congress.

Life Cycle Cost of an acquisition program is broken down in three ways:

- Appropriation categories
- Work Breakdown Structure
- Life Cycle Cost categories

Appropriation Categories- Appropriation categories are types of funds used by the Government (Congress) and consist of:

- Research, Development, Test, and Evaluation (RDT&E)
- Procurement
- Operations and Maintenance (O&M)
- Military Construction
- Military Personnel

These breakouts are necessary to develop internal budgets and submit budget requests to Congress. Work Breakdown Structure (WBS) is an organised method to break down a project into logical subdivisions at lower and lower levels of detail. A detailed Life Cycle Cost Estimate (LCCE) uses the WBS to aggregate and show costs by system and subsystem.

R&D costs include all the costs associated with the research and development phases (i.e., Concept and Technology Development and System Development and Demonstration).

Costs include:

- Cost of the investment phase (i.e., Production and any Facilities costs associated with the system).
- The total cost of procuring the prime equipment, its related support equipment, facilities, initial spares, and fielding of the system.

O&S costs include all costs incurred in using the system such as Personnel, Fuel, Maintenance (unit and depot), Sustaining investment (replenishment spares) and Training. Further, Disposal costs include the cost to dispose of the system after its

useful life. The costs are associated with disposing of the materiel system and include environmental and related costs.

However, there are some things that one needs to be careful about.

- Misappropriation Act- Funds can only be used for the programs and purposes for which Congress appropriated them.
- Anti-Deficiency Act- No obligation in excess of the amount can be appropriated or permitted by agency regulations. The act also forbids contract or obligation to pay money in advance of appropriations. Also, the act requires agency regulations to monitor and fix responsibility for violations of the act.
- Reprogramming- It refers to utilisation of funds in an appropriation for purposes other than those contemplated by Congress at the time of appropriation.

Indian DPP 2011- Maj Gen NS Vidyarthi, Technical Manager (Land Systems)

The aim of DPP 2011 is to ensure expeditious procurement of the approved requirements of the armed forces in terms of capabilities sought and time frame prescribed, by optimally utilising the allocated budgetary resources. In keeping with our national policy, self reliance and indigenisation are the prime driving force of our policy. We are continually evolving our procedures and frameworks to maintain and enhance transparency and probity in our acquisition process and take efforts to generate a level playing field for all partners, be it Indian or foreign. The entire gamut of selection process is competitive, not only in terms of pricing, but technology as well. In essence, we strive to secure our future needs and are continually seeking to learn from the experience and expertise in the rest of the world in this field including the European Defence Agency.

Following are the stages in Acquisition Process

- Request for information.
- Formulation of services qualitative. Requirements (SQRS).
- Acceptance of necessity (AoN).
- Request for proposal.
- Evaluation.
- Commercial negotiation by contract negotiation committee (CNC).
- Contract administration and post- contract monitoring.

The process of approval begins by uploading the RFI on the internet by SHQ. The draft SQRs are formulated based on responses to RFI and circulated to addressees for comments. Once the final SQRs are formulated, they are ratified by respective EPC (equipment policy committee) and approved by the service HQ.

Acceptance of Necessity is based on SoC made by SHQ and granted by DAC / DPB / SCAPCHC. The decisions are based on the following:

- Desired capability vs existing voids.
- Total quantity required.
- Break up of acquisition, over time.

Additionally, they include:
- Categorisation, quantity, cost.
- Trials, svc, offsets, ToT/ MToT, BFE etc.
- Valid for two years / one year after first retraction.

Request for Proposal (RFP) is the defining document for procurement scheme. All aspects of acquisition included in the document, which include equipment specifications, technical requirements, contractual obligations, payment & delivery conditions. It is a single stage- two bid system.

In keeping with our national policy, self reliance and indigenisation are the prime driving force of our policy. We are continually evolving our procedures and frameworks to maintain and enhance transparency and probity in our acquisition process and take efforts to generate a level playing field for all partners, be it Indian or foreign. The entire gamut of selection process is competitive, not only in terms of pricing, but technology as well. In essence, we strive to secure our future needs and are continually seeking to learn from the experience and expertise in the rest of the world in this field including the European Defence Agency.

The Fast Track Procedure covers urgent operational requirements which may or may not be included in the LTIPP, SCAP or AAP. Services get their requirement of equipment approved from the respective Service Chiefs and the AoN is accorded by a specially convened meeting of the DAC, chaired by the RM. Post accord of AoN, a standard RFP is issued. However the timelines for submission of proposals are compressed to 6 wks from 12 wks.

Since there are no elaborate trials, FTP is only invoked for ‘Buy’ category of proven equipment that does not merit elaborate trials. A high level empowered committee is formed which witnesses demo / evaluates equipment at vendor cost, in India or abroad. Time being an over-riding factor all contracts must be finalised within six months of initiation of FTP case. Since equipment proposed to be procured under FTP is to cater for urgent operational requirements, provisions exist for a strict penalty clause for vendors not adhering to delivery schedule. This is normally 1.5 per cent per week subject to a maximum of 15 per cent of the cost of delayed goods.

Like other nations, India too has an offset policy in the defence procurement procedure. Aim is to leverage high cost of defence imports towards enhancing development of own defence research and development as well as production industry through offsets. Salient features are:

- Offset clause is applied for all procurement proposals where indicative cost is Rs 300 crore (aprox 45 million euros) or more and the schemes are categorised as 'Buy (Global)' and 'Buy and Make'.
- Offset of 30 per cent of the estimated cost is the minimum required value of the offset. The DAC may also prescribe varying offset percentages above 30 per cent or waive off the requirement in special cases.
- A single window agency (Defence Offset Facilitation Agency) functioning under the supervision of Department of Defence Production has been set up to facilitate offset obligations and provide necessary assistance.
- Vendors could consider creation of offset programmes in anticipation of future obligations. Offset credits so acquired can be banked and discharged against future contracts. Banked offset credits would not be transferable.

For the purpose of defence offset, services will mean maintenance, overhaul, upgradation, life extension, engineering, design, testing of defence products, defence related software or quality assurance services. A list of defence products is given at Annexure VI to Appendix D of DPP 2008.

The technical offset offer contains details of the products, services and investment proposals indicating relative percentages, proposed Indian partners for offset investment and other relevant information. Details of banked offset credits as discharged offset obligations are also to be indicated. The commercial values of the offset proposals are not to be indicated in this technical offset offer. The technical offset offers would be scrutinised by a Committee to be constituted by the concerned Technical Manager of the Acquisition Wing, with the prior approval of Director General (Acquisition). The Committee may include representatives of the Services, Defence Finance and DRDO. DOFA will assist the Committee in the scrutiny by providing information as to the technical feasibility of the offset offer. The Committee may also incorporate experts as identified by the DRDO for scrutinising the technical offset offers. This Committee will examine the compliance of technical offset offers by the vendors for meeting the offset obligations.

The vendor is free to select the Indian offset partner for implementing the offset requirement. Only contracts for export of defence products or services or investment made after the signing of the main contract will be reckoned for discharging offset obligations. However, preapproved offset banking agreements and banked offset credits will be considered for discharge of offset obligations. For products which contain imported components, only the value addition in India will count towards offset obligations, viz, the value of imported components will not count towards offset obligations.
For `Buy (Global)- Category procurements, where offset is applicable, if an Indian firm including a Joint Venture between an Indian Company and its foreign partner is bidding for the proposal and is offering an indigenously developed product, then for such a case offset would not be applicable. For applicability of this clause, indigenous content in the product has to be a minimum of 50 percent. In case the indigenous content in the product is less than 50 per cent, the Indian firm or the Joint Venture has to ensure that

the offset obligations are fulfilled on the foreign exchange component of the contracted value.

Probity is an important element. All decisions are taken in collegiate manner and recorded accordingly. Independent evaluation is also done by different bodies at every stage of the process and approvals at intermediate steps given by DG (ACQ). It is important to note that SQRs aim at securing services' needs through multi vendor procurement and all information/ clarification is shared with each vendor uniformly. There are identical payment and contractual terms for all vendors (PSUs/ Private/ Foreign).

DAY III

Indian Defence Offset Policy: Maj Gen B S Yadav (Retd)

Offset is a requirement imposed by government on their foreign vendors to create commercial activity in the country where the sale occurred. Offset is a national-added-value, gained by government major acquisition from foreign vendors. It is an internationally accepted practice in Aerospace, Defence and large commercial procurement. The main objective of Offset is to achieve sustainable and deep-rooted economic benefits, especially through the encouragement, promotion and establishment of projects that lead to the transfer of modern technology and helps facilitate its assimilation into the local economy. It facilitates establishment of projects that contribute to the creation and development of high-skilled jobs. It attracts foreign investments to development projects, resulting into achievement of economic development through technology, labour and capital.

Offset policy is post cold war phenomenon which has become an essential part of all arms deals. Over 130 countries are demanding defence offsets now. India is a recent entrant in the field of offsets. India adopted offset policy in Defence Procurement Procedure – 2005 for the first time taking Govt Financial Regulations (GFR)-2005 as the mother document. After studying various models, the Ministry of Defence (MoD) decided to follow an approach of gradual, incremental and phased application of offsets. It did not want to rush in without acquiring adequate experience. Therefore, it opted to keep offsets at base levels initially. Offsets are of two type's i.e. direct offsets and indirect offsets.

Direct Offsets. Here, the trade arrangement is related to the primary product sold. It implies that the compensatory dispensation remains confined to the main weapon system, its sub-assemblies and components.
Indirect Offsets. These generally take the form of compensatory trading (reciprocal trade, counter purchase, switch trading, counter deliveries and parallel trade).

Offsets apply to all cases above $75 Million. A minimum of 30 per cent will be sought as offsets. However percentage of offsets can be varied. In civil aerospace and internal

security equipment direct & indirect offsets can only be discharged through the following:

- Direct purchase of defence products, components manufactured by Indian defence industries.
- Provision of “Services” by any Indian defence industries. “Services” will mean maintenance, overhaul, up gradation, life extension, engineering, design, testing, defence related software or quality assurance services with reference to eligible products and training.
- Direct foreign investment in Indian defence industries.
- Direct foreign investment in Indian organisations engaged in research in defence R & D as certified by Defence Offset Facilitation Agency.

Discharge of offset obligations can also be through direct foreign investment in industrial infrastructure for services, co-development, joint ventures and co-production. Direct foreign investment in Indian organisations engaged in research in defence R & D are required to be certified by DOFA. R&D investment in civil infrastructure and for those technologies that are otherwise available are not counted. Certain other listed items for offsets are products for internal security, arms and their ammunition including all types of close quarter weapons, protective equipment for security personnel including body armour and helmets, vehicles for internal security purposes including armoured vehicles, bullet proof vehicles and mine protected vehicles, riot control equipment and protective as well as riot control vehicles, specialised equipment for surveillance including hand held devices and unmanned aerial vehicles. To be eligible for defence offset any product/firm should meet three mandatory criteria:

- Product be included in the List of Defence items. Aerospace and Internal Security items are now part of this list and would be permitted on RFP post DPP-11 (Direct offset).
- Should have Industrial License for production. FDI norms.
- For Indian registered firms, the maximum FDI in defence is 26 per cent.

RFP will contain offset obligation. Vendor has to give a simple undertaking with Technical Offer. Technical and commercial offset proposals to be submitted in two separate covers to Technical Manager by the date specified in RFP which will not be earlier than 3 months of submission of main offers. Vendor should meet the offset provision technically for being eligible for the Commercial Negotiation stage. RFP will contain offset obligation. Offset Offers will be opened along with main commercial offer. DOFA will evaluate and give recommendations to CNC in 4 weeks. Vendor can modify his commercial offer at CNC stage.

Technical Offset Offer (TOO) has to contain details of products, services and investment proposals indicating relative percentages and proposed Indian partners. A Technical Committee is constituted with representatives of services, Def Fin, DRDO & DOFA to examine technical feasibility of TOO, in terms of capability of Indian partner to meet the requirement. This Committee may incorporate experts, if required. For

products which contain imported components, only the value addition in India will count towards offset obligations. Commercial offset offers will contain detailed offer specifying absolute amount of offsets with a break up of details, phasing and Indian partner. It will be opened with main commercial bids by Commercial Negotiations Committee, duly advised by DOFA. Offset contract will be signed with main contract. Vendor cannot delay execution of main contract on the plea of inability of Indian offset partner to execute offset contract. If a vendor fails to fulfill the offset obligation in a particular year, penalty of 5 per cent of the unperformed offset obligation will be levied. Unfulfilled offset value will be carried forward to the subsequent year. Vendor failing to implement the full offset obligations during the period of the main contract (or duly extended) will be liable to be disqualified for participation in future defence contracts. Any differences or disputes will be settled through discussions. Decision of acquisition wing will be final. In case of joint ventures (of Indian and foreign firms) where Indian firm is bidding, the foreign firm concerned will have to discharge offset obligation as per the RFP requirement. The offset contract and the main contract would be coterminous. Disputes would be settled through mutual discussions. Arbitration provision of main contract will be applicable for offset contracts.

To facilitate the procedure MoD has established DOFA to play an active role in helping the process. DOFA will assist potential vendors in Interfacing with the Indian defence industry, identifying potential offset products/ projects and providing requisite data and information for this purpose.

DOFA is serviced by the Directorate of Planning & Co-ordination, in the DDP under the Director (Planning & Co-ordination), with the Joint Secretary (Exports) as the Chairman of DOFA .The Director (Planning & Co-ordination) is assisted by a Planning Officer (Capital Acquisition Plan). The Director (P&C) is the interface with industry and the Acquisition Wing.

There are now examples of successful Banking of Offset Credits, notably the Mahindra /BAE JV, the BAE Systems FDI has been successfully Banked for Offset Credits and took a period of 9 months. Other OEMs have applied to DOFA to Bank Offset Credits and there are some other successes, but no official report on the level of banked credits. Offsets credits are always awarded and monitoring of offset credit Claims/Audits have commenced, being performed by the Services, however no official figures are published to date. The process is slow, but starting to show success. However, without the re-organisation of DOFA to an offset approval agency, progress will continue to remain slow.

Defence Procurement Procedure: Cmde Sujeet Samaddar, NM (Retd)

After the 187th Public Accounts Committee report of 1989, DPP 2002 was formulated. After refinement, DPP2011 has recently been released. The main objective of this procedure is to ensure expeditious procurement of the approved requirements of the Armed Forces in terms of capabilities sought and time frame prescribed by optimally utilising the allocated budgetary resources. While achieving the same it will demonstrate the highest degree of probity and public accountability, transparency in operations, free competition and impartiality. In addition, the goal of achieving self reliance in defence equipment will be kept in mind.

Several Councils and committees are made like Defence Acquisition Council for procurement above INR100 crore, Defence Procurement Board for procurement beyond INR 50 crore and less than INR 100 crore and SCAPCHC for procurement below INR 50 crore. DPP 2011 came into effect from 01 Jan 2011 and covers all capital acquisitions by defence services and Indian Coast Guard both from indigenous and ex import. It has for the first time introduced 'buy and make Indian' in main text, and covers a separate chapter on shipbuilding. One of the categories of DPP11 is Capital Acquisition and is categorised as under: -

- Under acquisitions covered under the Buy Decision, Buy would mean an outright purchase of equipment. Based on the source of procurement, this category would be classified as buy (Indian) and buy (Global). 'Indian' would mean Indian vendors only and 'buy global' would mean foreign as well as Indian vendors. 'buy Indian' must have minimum 30 per cent indigenous content if the systems are being integrated by an Indian vendor.
- Acquisitions covered under the Buy & Make decision would mean purchase from a foreign vendor followed by licensed production / indigenous manufacture in the country.

- Acquisitions covered under the Buy & Make (Indian) decision would mean purchase from an Indian vendor including an Indian company forming joint venture /establishing production

- Arrangement with OEM followed by licensed production / indigenous manufacture in the country. "Buy & Make (Indian)" must have minimum 50 per cent indigenous content on cost basis.

- Acquisitions covered under the Make decision would include high technology complex systems to be designed, developed and produced indigenously.

- All cases involving upgrade to an in service weapon system / equipment will also be covered by this procedure. Such cases could be categorised depending on scope of the proposal, availability of technology indigenously and the need for seeking critical technologies from foreign vendors.

In order to facilitate formation of Joint Ventures (JVs) or alliances for co-production with Indian companies, a new category of acquisition 'Buy and Make (Indian)' has been introduced wherein RFPs can be issued to Indian vendors including an Indian company forming JV / establishing production arrangement with foreign OEM followed by licensed production/indigenous manufacture in the country. In such a case the Indian vendor would need to comply with minimum 50 per cent indigenous content on cost basis.

All tenders will be evaluated by Technical Evaluation board which comprises of Service Officer as the chairman and members are User, Maintainer, QA, PA and DRDO representatives. The mandate should have Technical and Commercial Compliance Statement and no Two Vendors should be offering same equipment and Qualified Vendors should be identified. The TEC prepared be forwarded to DG (Acquisition) which is required to be recommended by TM. For Field Trials the board comprises of User Service, DRDO, QA , PA and Acq Wing and should be a Multi-disciplinary Technical Delegation. Vendors provide equipment after TEC acceptance. Conduct for TEC Qualified Vendors is on NCNC Basis or as per Trial Directive issued by SHQ. The Trial outcome is communicated at Location. The evaluation in all Conditions where Equipment may be employed and by actual trials, computer simulation or at vendor premises. The Field Evaluation Report is required to be Submitted to SHQ for Staff Evaluation, which after evaluation is forwarded to TM for recommendation and further to DG (Acq) for acceptance.

Single Vendor Situation will only be considered if the equipment acquired is the State-of-the-art equipment and being manufactured by only one vendor and is not in DRDO Technology Scan or if after Post Staff Evaluation only one vendor emerges in fair competition in a multi-vendor situation. Various other exceptions are:

- Design and Development projects by DPSU/OFB/RUR
- Co-production / ToT /procurement with DAC prior approval by DPSU/OFB
- Repeat Order for indigenous developed equipment or ToT obtained by DPSU

Repeat Orders/Option Clause can be exploited under following conditions:

- Qty upto 50% over the initial contract.
- Same Terms and Conditions.
- No Downward trend in prices.
- Direct RFP to Original Vendor.
- 100% over the initial contract.
- Larger orders possible after AON.

Independent recommendations offered by the speaker:

- Government should publish in the Annual report for each contract as to how many participated and who was finally given the contract.
- Buy and make should be made without the TOT, which will invite all private and multinationals to participate and can result into much lesser cost of the Project.

- The contracts as far as possible should be Bi global and have directed offsets to meet the gaps in technology of our country.
- For capital procurements Non-Disclosure contract or Integrity Pact can be signed with Indian firms which should be legal and will facilitate sharing of information.
- The Qualitative requirement in broad terms should be dictated and not system or subsystem wise to be fitted in. The finer details are left to the firm to decide and produce the required equipment.
- Staggered orders should be avoided. Quantity to be procured be indicated and repetition of same items in piecemeal fashion must also be avoided to facilitate the firm to further procure items in bulk which will result into reduction in overall cost of the Project.
- The physical presence of the vendor frequently for discussions at user location adds to the cost and should be restricted.
- Bench marking should be carried out with all precautions and should be reasonable with err on the higher side so that the final deal should proceed and not result into no go situation.
- As per procedures the schedule of payment is 15 per cent, 75 per cent and then remaining 10 per cent. There should be some procedure for stage payments to the firm so that the firm may not take loan from market the interest of which ultimately add to the cost of the Project.
- There should be some Change Management Policy laid down by the Government, which should lay down the procedures to restrict the frequent changes in the Project and should evolve a system of accountability.

Indian Industry has the will to do projects for the Indian Defence Forces and is striving hard to become business partners .Certain vested interests are attempting to restrict this entry which should be guarded against.

Evaluation and CNC - Col Dhiraj Seth, WE Dte

The scope of evaluation and CNC within the Defence Procurement Procedure is further subdivided into technical, field and GS evaluation. The first one covers the evaluation of the technical bids with reference to the qualitative requirements (QRs). The TEC is constituted by the service HQ under a service officer with representation from the user agency, the maintenance agency, QA agency, PA and DRDO representative (where ToT is involved). The technical evaluations are not materially changed once submitted. Minor variations are acceptable so far as the basic character is not changed. However, revisions will be equal for all vendors, SQRs are not diluted and the original commercial quote is not changed.

The TEC ensures that the compliance statement is prepared, the RFP compliances are met and the same equipment is not on offer by two or more vendors (only OEM is accepted). The TEC report is complied within three months and goes to the TM (LS) and then to the DG (Acquisitions). If only one vendor is found compliant, the RFP is retracted on approval of DG (Acquisitions).

The field evaluation entails field trials to validate performance claims as stipulated in the technical proposals and ascertain compliance of parameters in actual terrain and climatic conditions. Its aim is to assess the performance of the equipment against GSQR/OP parameters and confirm suitability for introduction into service. User trials and technical trials form part of it. Trials can be carried out by simulation, indigenously and abroad. Repairs are permissible in situ. The equipment is tested in all weather and terrain conditions and provided to the users for trials on 'No Commitment No Cost' (NCNC) basis. The procedure is broadly classified as X, Y and Z under the responsibility of the WE Directorate, Line Directorate and the nominated agency respectively. The trials are classified into troop, confirmatory, validation, retrials and developmental trials.

The GS evaluation analyses trial evaluation results and shortlists equipment recommended for introduction into service. It is conducted under the responsibility of the service HQ and looks into the demonstrated performance of the equipment vis-à-vis the SQRs. The technical oversight committee is constituted by the defense secretary for projects over Rs 300 crore. It is assisted by the TMLS for all inputs. It has three members ie a service officer, a DRDO scientist and a representative of DPSU. It checks trials, trial evaluation, compliance to QRs and selection of vendors and submits its report within 30 days to the defense secretary.

The contract negotiation committee process begins after the staff evaluation report at the DG (Acquisition) and the TOC report by the defense secretary have been selected. It carries out all processes from the opening of the commercial bids till the conclusion of the contract. The standard CNC chairman is the acquisition manager. The technical manager, finance manager, advisor (cost), DGQA representative, procurement agency, user, contract management branch at service HQ, repair agency, undersecretary concerned and the member secretary as nominated by the chairman are the members. If it is with ToT, then the representative of DDP, DRDO and PA are also included as members. If offset is included, representative of defense offset facilitation agency is included. The powers of CFAs vary as per the cost. The process is simple and transparent but time consuming due to the exigencies involved.