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# THE MSFC PROGRAM CONTROL DEVELOPMENT PROGRAM

It is the policy of the Marshall Space Flight Center (MSFC) that employees be given the opportunity to develop their individual skills and realize their full potential consistent with their selected career path and with the overall Center's needs and objectives.

The MSFC Program Control Development Program has been designed to assist individuals who have selected Program Control (Figure 1) or Program Analyst Program Control (Figure 2) as a career path to achieve their ultimate career goals. Individuals selected to participate in the MSFC Program Control Development Program will be provided with development training in the various Program Control functional areas identified in the NASA Program Control Model (Figure 3).

The MSFC Program Control Development Program should be mutually beneficial to the individual and to MSFC. Each individual will be afforded the opportunity for pursuing his or her career goals while simultaneously providing the Center with a source of knowledgeable and well-trained people for strategic positions within the Program Control discipline. The purpose of the MSFC Program Control Development Program is to develop individual skills in the various Program Control functions by on-the-job and classroom instructional training on the various systems, tools, techniques and processes utilized in these areas.

The Program offers a systematic approach for individual development by:

- Allowing for rotational job assignments to obtain on-the-job training in the various Program Control functional areas.

- Providing classroom instructional training on various program control systems, processes and procedures to assist in the development of skills required for the Program Control functional areas.
- Encouraging continuation of the individual's formal education as a means of self-improvement.

The MSFC Program Control Development Program is made available to individuals in the AST classification, as well as individuals in the Program Analyst classification who have selected Program Control as a career path, and who have been selected for participation in this program. Applicants may be nominated by the organizations or self-nominated.

### Selection Process

A committee is appointed by the administrative Operations Office to review and select applications for the MSFC Program Control Development Program. The committee is comprised of membership from the Administrative Operations office, Comptroller's office and the Program or Project Office.

The means to be used for publicizing vacancies for this program may be reassignment announcements, *The Personnel Perspective*, *The Marshall Star* or other media. The opportunities will open to GS-11, -12 and -13 AST applicants, with potential progression to the GS-13 level, if selection was at a lower level, based upon successful completion of the program. They will open to GS-11 and GS-12 Program Analyst applicants, with potential progression to the GS-12 level, if selection was at a lower level, based upon successful completion of the program.

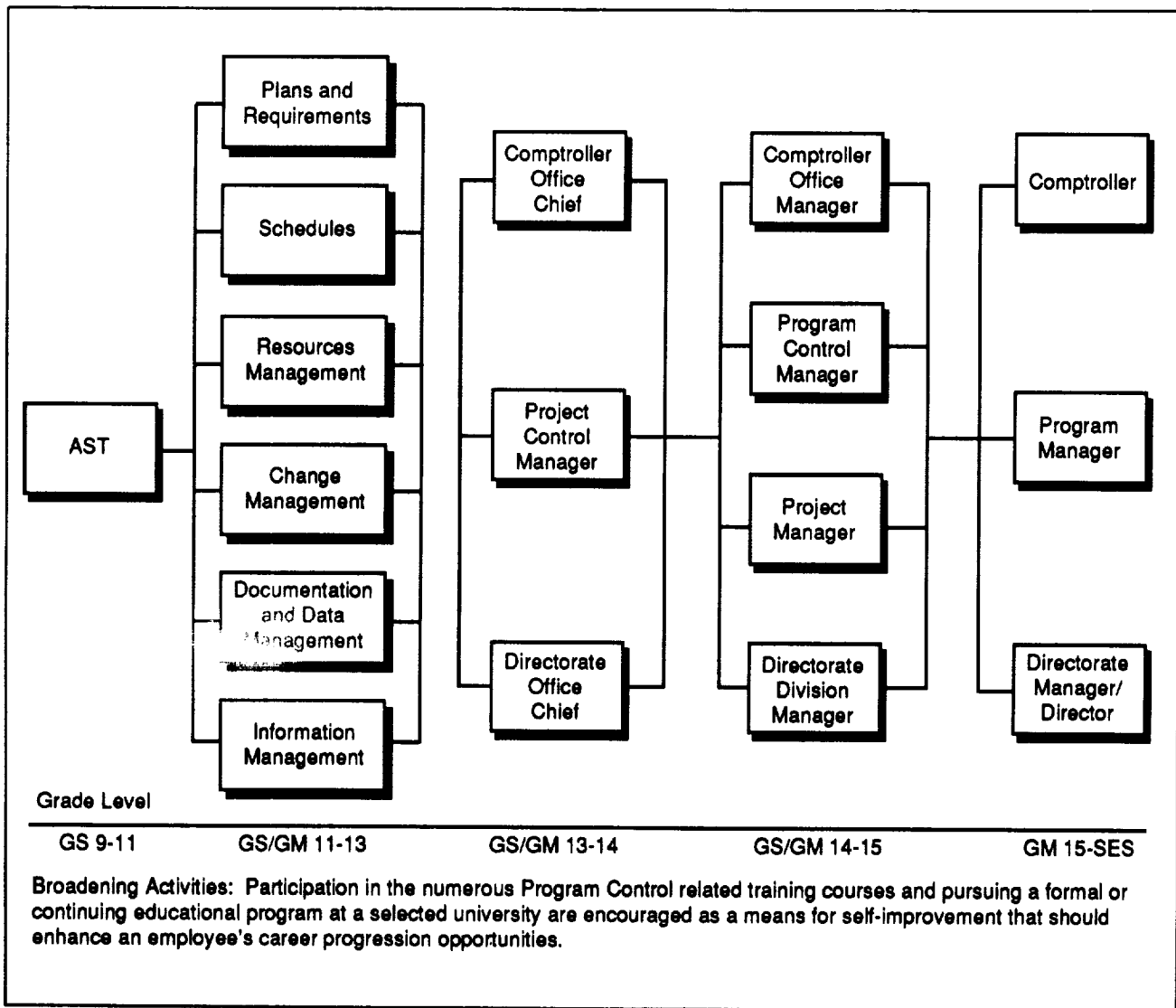


Figure 1. Example of AST Program Control Career Progression

Selection is based on the individual's application and personal interviews. Notification of selection and final appointment to the program will be made by the Administrative Operations Office, following a review by the Director of Administrative Operations and the Comptroller.

Individuals selected for this program are assigned to the MSFC Comptroller's Office for a two-year developmental period. During this period, individuals will be temporarily assigned on a rotational basis to offices identified for specific on-the-job training for the indicated periods. To the extent possible, re-

lated classroom instructional training for all Program Control functional areas will be offered during this two-year period.

Standard Individual Development Plans will be prepared for each individual to schedule:

- Rotational assignments, in order to minimize any impact on the organization providing the training.
- Classroom instructional training courses identified in this program, as well as other pertinent courses that might become available.

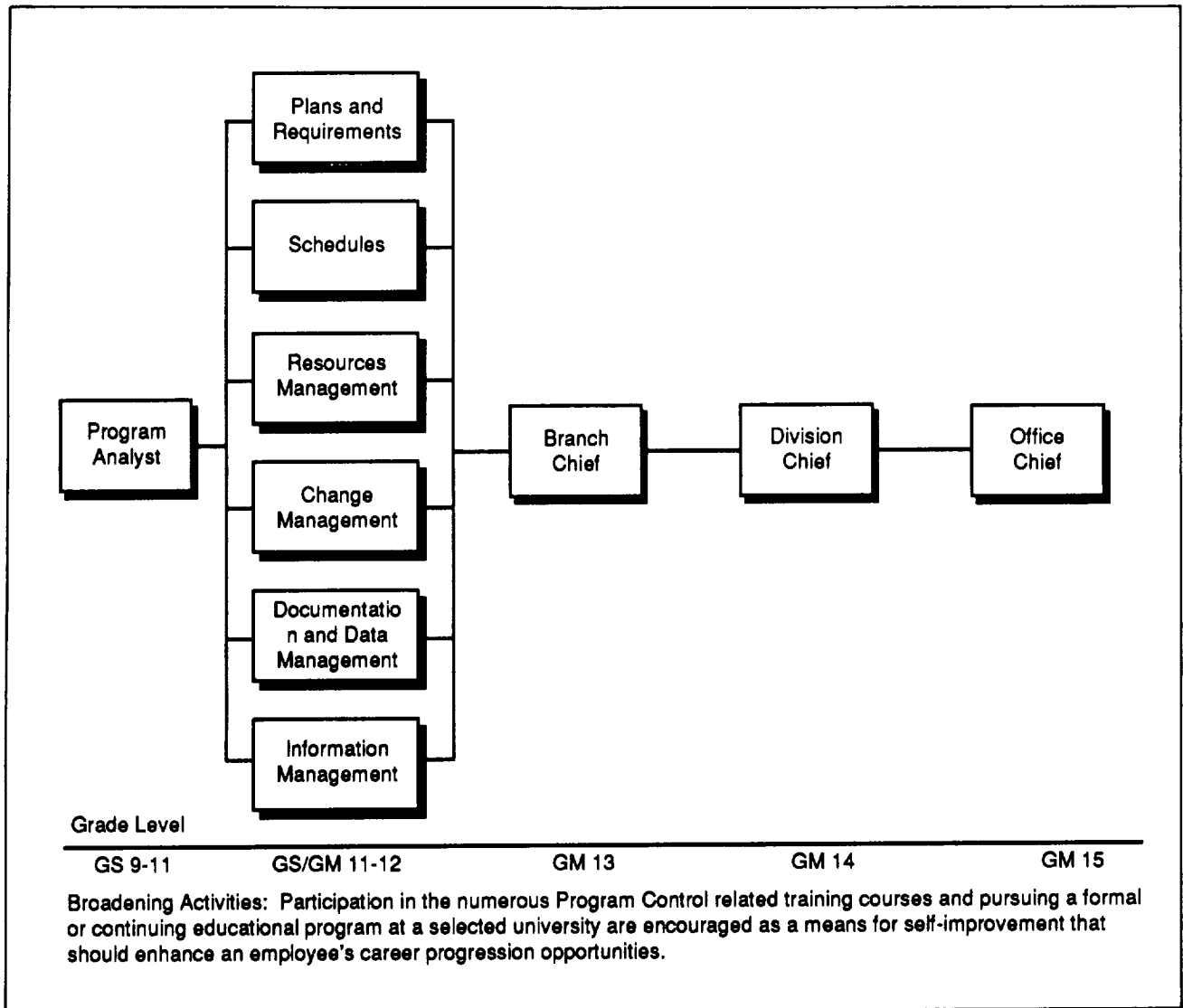


Figure 2. Example of Program Analyst Program Control Career Progression

- Formal or continuing educational programs selected by the individual for self-improvement.

**Administrative Responsibilities**

The responsibility for administration of the MSFC Program Control Program is:

- The Comptroller's Office will be responsible for the administration of the program; the technical and programmatic content of the program; preparation of Standard Individual Development Plans, including planning and scheduling rotational job

assignments, classroom instructional training and formal or continuing educational programs; and normal personnel supervisory responsibility for the two-year development period.

- Administrative Operations will be responsible for preparing and issuing Announcements for the MSFC Program Control Development Program and the individual selection process; providing classroom instructional training; and counseling individuals on formal educational opportunities.

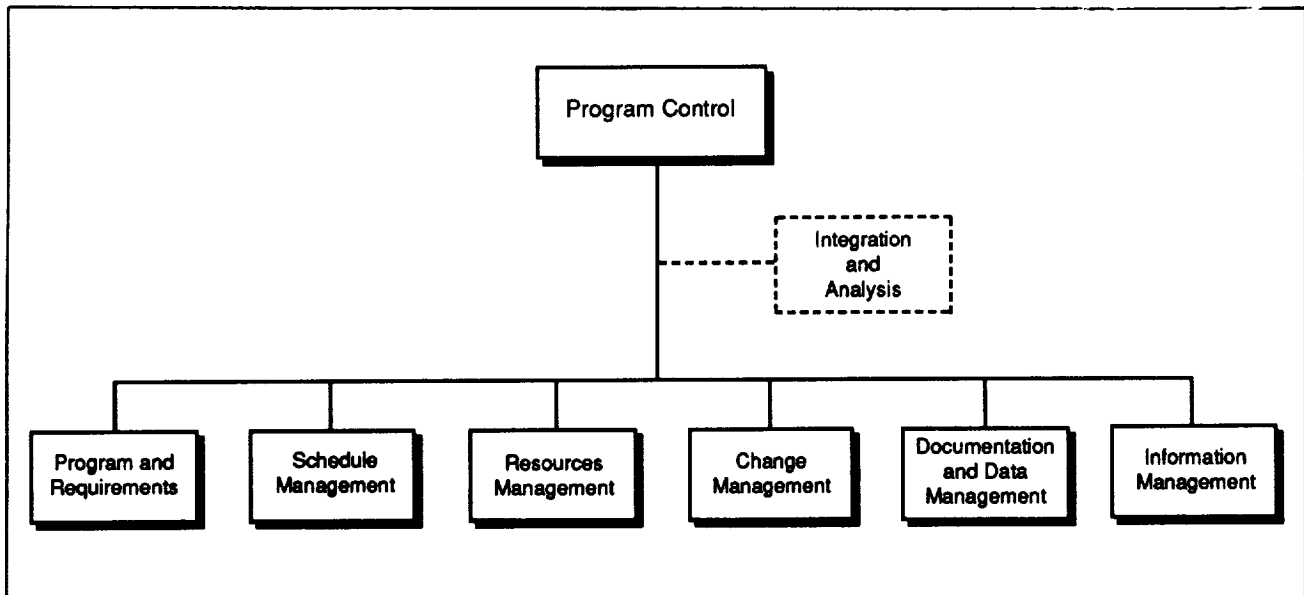


Figure 3. Program Control Functions

- Organizational elements providing on-the-job training will be responsible for providing the training set forth in the Standard Individual Development Plans for their particular area of responsibility and assisting with arrangements for classroom instructional training as appropriate. A mentor will be designated by the organizational element supervisor to assure that required on-the-job training is accomplished to the extent possible.

The participating individual, in concert with the mentor in the participating organization, will be responsible for completing (to the extent possible) on-the-job training requirements set forth in the Standard Individual Development Plans, planning and attending classroom instructional training, and other self-improvements such as formal or continuing educational programs.

**Rotational Job Assignment.** A major feature of the MSFC Program Control Development Program is that of rotational job assignments. Table 1 presents typical rotational job assignments to which participants will be assigned over the two-year training program.

Table 1. Examples of Rotational Job Assignments

Assignment	Months
Comptroller's Office	4
NASA Headquarters	2
Procurement Office	2
Project/Program Office	5
Engineering Cost Group	3
S&E Resources Management	3
Configuration Management	3
Resident Office	2
Total	24

These job assignments will allow the individual to receive on-the-job training to satisfy the training requirements set forth below.

**Training Requirements.** Table 2 lists typical training requirements for each job assignment. This on-the-job training, coupled with classroom instructional training conducted during the two-year period, will provide the individual with the training needed for each Program Control area. Additionally, it should prepare the individual for job opportunities of greater responsibility on his or her career development path.

Table 2. Typical Training Requirements for Each Job Assignment

<b>NASA HEADQUARTERS</b>		
<p>Program Office</p> <ul style="list-style-type: none"> <li>- Organization Structure</li> <li>- Roles and Responsibilities</li> <li>- Working Relationships</li> </ul> <p>Field Center Program Offices</p> <p>NASA Comptroller</p> <p>Other NASA HQ Offices</p>	<p>NASA Comptroller</p> <ul style="list-style-type: none"> <li>- Organization Structure</li> <li>- Roles and Responsibilities</li> <li>- Working Relationship With Program Office</li> <li>- Independent Assessments</li> <li>- Non-Advocacy Review Assessments</li> <li>- Interactions With OMB/Congress</li> <li>- Federal Budget Process</li> <li>- NASA Budget Process</li> </ul>	
<b>COMPTROLLER'S OFFICE</b>		
<p>POP Process</p> <p>Institutional Operating Plan</p> <p>Research and Program Management Budget</p> <p>Manpower Planning</p> <ul style="list-style-type: none"> <li>- 918 Report</li> <li>- Manpower Management Info System</li> </ul> <p>Resources Management Info System</p> <p>Federal Budget Process/NASA Budget Process</p> <p>Receipt, Allocation and Control of Funds</p> <ul style="list-style-type: none"> <li>- 504 and 506 Reports</li> <li>- Resources Authority Plan</li> </ul> <p>NASA Organization</p> <p>MSFC Organization</p> <p>Program Control Overview</p>	<p>Contractor Reporting of Correlated Cost and Performance Data (533 Reports)</p> <p>Performance Measurement System</p> <p>NASA Financial Management System</p> <p>NASA/MSFC Accounting System</p> <p>Comptroller Office</p> <ul style="list-style-type: none"> <li>- Organization Structure</li> <li>- Roles &amp; Responsibilities</li> <li>- Financial Management Operations</li> <li>- Working Relationships</li> </ul> <p>Program and Project Office</p> <p>NASA Comptroller</p> <p>NASA Program Offices</p> <p>Construction of Facilities Budget Process</p> <p>Program Support Requirements</p> <p>Project Planning Process</p>	
<b>PROJECT/PROGRAM OFFICE</b>		
<p>Project Plans and Requirements</p> <ul style="list-style-type: none"> <li>- Project Plan</li> <li>- Management Plan</li> <li>- Implementation Plans</li> <li>- Requirements and Specifications</li> </ul> <p>Schedules</p> <ul style="list-style-type: none"> <li>- Logic Networks</li> <li>- Project Schedules</li> </ul> <p>Master</p> <ul style="list-style-type: none"> <li>- Supporting</li> <li>- Status/Reporting/Analysis</li> </ul> <p>Work Breakdown Structure</p> <ul style="list-style-type: none"> <li>- Project WBS</li> <li>- Contract WBS</li> </ul>	<p>Budgeting</p> <ul style="list-style-type: none"> <li>- Project Budgets</li> <li>- Contractor Budgets</li> <li>- 533 Reports</li> <li>- Performance Measurement</li> <li>- Cost Analysis</li> </ul> <p>Project/Program Office</p> <ul style="list-style-type: none"> <li>- Organization Structure</li> <li>- Roles &amp; Responsibilities</li> <li>- Working Relationships</li> </ul> <p>S&amp;E</p> <p>Procurement</p> <p>Project/Program Office</p>	<p>NASA HQ Project/Program Office</p> <p>Comptroller</p> <p>Other Centers</p> <p>Others</p> <p>Project/Program Reviews</p> <p>Project Reporting</p> <p>Data and Information System</p> <ul style="list-style-type: none"> <li>- Data Information System</li> <li>- Data Base</li> <li>- Modules</li> <li>- Analysis</li> </ul> <p>Independent Analysis</p>
<b>PROCUREMENT OFFICE</b>		
<p>Contract Management</p> <ul style="list-style-type: none"> <li>- Procurement Planning</li> <li>- Solicitation Process (Including SEB Process)</li> <li>- Contract Negotiation</li> <li>- Contract Administration</li> <li>- DCMC Role and Responsibilities</li> <li>- Award Fee Process</li> <li>- Change Assessment</li> </ul>	<p>Pricing</p> <ul style="list-style-type: none"> <li>- Contract Pricing</li> <li>- Rates &amp; Factors</li> <li>- Inflation Factors</li> <li>- Overhead/G&amp;A Rates</li> <li>- DCAA/DCMC Role and Responsibilities</li> <li>- Forward Pricing</li> </ul>	

Table 2. Typical Training Requirements for Each Job Assignment (cont.)

<b>S&amp;E RESOURCES MANAGEMENT OFFICE</b>		<b>ENGINEERING COST GROUP</b>
<p>Research and Technology Operating Plans</p> <p>Institutional Planning Budgeting Process</p> <p>Budget Execution</p> <ul style="list-style-type: none"> <li>- Source of Funding</li> </ul> <p>Manpower Planning/Control</p> <ul style="list-style-type: none"> <li>- Skills Analysis</li> </ul> <p>Purchase Requests</p> <p>Facilities and Equipment Requirements</p>	<p>OAET Budget Process</p> <p>S&amp;E Directorate</p> <ul style="list-style-type: none"> <li>- Organization Structure</li> <li>- Roles and Responsibilities</li> </ul> <p>Relationships to Program/Project Offices</p> <ul style="list-style-type: none"> <li>- Program Support Agreements</li> <li>- Program Support Requirements</li> </ul>	<p>Cost Estimating Techniques</p> <ul style="list-style-type: none"> <li>- Parametric</li> <li>- Analogy</li> <li>- Bottom-up</li> </ul> <p>Cost Estimating Relationships</p> <ul style="list-style-type: none"> <li>- Cost Modeling</li> <li>- Cost Risk Assessment</li> <li>- Economic Benefits Analysis</li> <li>- Redstar Data Base</li> <li>- Sensitivity Analysis</li> <li>- Trade Studies</li> </ul>
<b>CONFIGURATION MANAGEMENT DIVISION</b>		
<p>Configuration Management Division</p> <ul style="list-style-type: none"> <li>- Organization Structure</li> <li>- Roles &amp; Responsibilities</li> <li>- Working Relationships</li> </ul> <p>Program/Project Offices</p> <p>S&amp;E Laboratories</p> <p>Safety and Mission Assurance</p> <p>Configuration Management System</p> <ul style="list-style-type: none"> <li>- Identification</li> <li>- Control</li> <li>- Accounting</li> <li>- Verification</li> </ul> <p>Configuration Mgmt. Requirements</p> <p>Change Process</p> <ul style="list-style-type: none"> <li>- Engineering Change Request</li> <li>- Engineering Change Proposal</li> <li>- Change Control Board Directive</li> <li>- Change Flow</li> <li>- Change Integration</li> </ul> <p>Baseline Reviews</p> <ul style="list-style-type: none"> <li>- Preliminary Requirements Review</li> <li>- Preliminary Design Review</li> <li>- Critical Design Review</li> <li>- Design Certification Review</li> <li>- Configuration Inspection</li> <li>- Acceptance Review</li> </ul>	<p>Change Control Boards</p> <ul style="list-style-type: none"> <li>- Organization Structure</li> <li>- Membership</li> <li>- Operation</li> </ul> <p>Tracking and Accounting System</p> <p>Verification</p> <p>Documentation and Data Management System</p> <ul style="list-style-type: none"> <li>- Data Requirements</li> <li>- Data List</li> <li>- Data Procurement Document</li> <li>- Data Classification</li> </ul> <p>Documentation Tree</p> <p>Specification Tree</p> <ul style="list-style-type: none"> <li>- Program</li> <li>- Project</li> <li>- Contract End Item</li> <li>- Critical Procurements</li> </ul> <p>Interface Control</p> <ul style="list-style-type: none"> <li>- Requirements</li> <li>- Documents</li> </ul> <p>Document Processing</p> <ul style="list-style-type: none"> <li>- Electronic Processing</li> <li>- Archiving</li> <li>- Repository</li> </ul>	
<b>RESIDENT OFFICE</b>		
<p>Resident Office</p> <ul style="list-style-type: none"> <li>- Organization Structure</li> <li>- Roles &amp; Responsibilities</li> <li>- Working Relationships</li> </ul> <p>Program/Project Office Contractor</p> <p>Defense Contract Management Command (DCMC)</p> <p>Defense Control Audit Agency (DCAA)</p> <p>Contractor</p> <ul style="list-style-type: none"> <li>- Organization Structure and Responsibilities</li> </ul>	<p>Contractor (cont.)</p> <ul style="list-style-type: none"> <li>- Internal Planning &amp; Control System</li> <li>- Work Authorization System</li> <li>- Interdivisional Work Authorizations</li> <li>- Subcontract Management</li> <li>- Internal Functional Organizational Relationships</li> <li>- Contractor Overhead/Burden</li> <li>- Requirements</li> <li>- Approvals</li> <li>- Budget Allocations/Control</li> </ul>	<p>Contractor (cont.)</p> <ul style="list-style-type: none"> <li>- General and Administrative Expenses</li> <li>- Preparation of Contractually Required Data</li> <li>- Direct Budgets</li> <li>- Requirement Determination</li> <li>- Direct Budget Allocation</li> <li>- Cost Collection</li> <li>- Stating</li> <li>- Cost Reporting</li> <li>- DCMC</li> </ul>

**Training Courses.** Table 3 identifies numerous training courses available to MSFC employees. The training courses are extracted from the latest issue of the *MSFC Training Course Catalog* and have been grouped into the various Program Control functional areas to provide the individual with information on the many related course opportunities available. The list is representative and not all inclusive. The designation "N/A" means that the information was not available at time of printing. Some of the courses listed may no longer be available or may have changed. Some new training courses may become available that are not listed. For these reasons, it is important that the participant and his or her supervisor or mentor consult with the MSFC Training Branch in planning individual training needs.

Because of the large number of training courses available in certain functional areas, it will be necessary that the individual work with his or her supervisor and mentor in selecting the minimum essential courses needed to successfully complete the program. The Program Control Overview course is considered mandatory for this program. It will be presented locally on an ad hoc basis.

### **Continuous Self-Improvement Program**

Individuals selected for the Program Control Development Program are encouraged to participate in a formal or continuing educational program. There are many opportunities for individuals to seek self-improvement through various educational programs relating to the Program Control career path:

- Graduate programs at a selected university:
  - Master of management at the University of Alabama at Huntsville (UAH), which requires an undergraduate degree in engineering.

- Master of Science in engineering (with options in industrial engineering, systems engineering, etc.) and Master of Science in operations research at UAH.
- Master in engineering or a Master of business administration in Auburn University's "Outreach Program."
- Master of Science in industrial management at the University of Tennessee Space Institute.
- Master of business administration at Alabama A&M in cooperation with Pennsylvania State University. The MBA curriculum is specifically designed to give the student an opportunity to obtain a degree in business, regardless of the field in which he or she majored at the undergraduate level.
- Masters degrees in a number of non-engineering areas at the Florida Institute of Technology.
- Continuing education programs:
  - UAH Division of Continuing Education offers numerous educational opportunities designed to enhance professional and personal development. Continuing education credit courses enable students to pursue an undergraduate or graduate degree. Continuing education non-credit short courses and certificate programs provide quality training and education for professional and personal development. Especially noteworthy is the Project Management Certificate Program, a non-degree program requiring about 81 hours of classroom work over a period of about six months. A certificate from UAH or the Project Management Institute is awarded upon successful completion of the program.

The details of the above and other educational programs are available in the Personnel Development Division, Administrative Operations Office, MSFC. Individuals electing Program Control as a career development field are encouraged to give serious consideration to the many educational program opportunities available to them.

Upon completion of the MSFC Program Control Development Program, individuals will be assigned to a permanent position in a va-

cancy in the Program Control discipline commensurate with his or her position (title, grade and series) and career goals.

The MSFC Program Control Development Program offers no guarantees of promotion or career changes, except for those contained in the paragraph "Selection Process" above, but it does help individuals develop and grow personally and professionally, thus enhancing their value to the Center by improving their qualifications for future opportunities.



Table 3. MSFC Program Control Training Courses

Program Control			Resources Management		
Course Title	Course No. or Sponsor	Duration (hrs)	Course Title	Course No. or Sponsor	Duration (hrs)
Program Control Overview	NASA	40	Federal Budget Process	40203	16
Project Management Workshop	41549	24	NASA Budget Process	N/A	N/A
Research and Development Contracting	40772	15	Cost/Manpower Mgmt. (includes Federal Budget Process and NASA Budget Cycle)	20125	16
Source Evaluation Procedures (for FED Procurements)	40776	24	Engineering Economics	30433	40
Source Evaluation Procedures	41554	15	Introduction to Financial Management	40249	40
Technical Project Management	40971	24	Budget Formulation	40177	40
Types of Government Contracts	40785	24	Budget Execution	40176	40
Basic Planning and Analysis	N/A	40	Cost Analysis and Estimating Techniques	40531	32
Introduction to Space Systems	N/A	36	Cost and Price Analysis	40192	40
Contract Changes and Terminations	40706	40	Advanced Cost and Price Analysis	41526	40
Federal Acquisition Process	41537	N/A	Budget Analysis Workshop	40174	40
Contractor Project Planning and Control System	N/A	N/A	Statistical Techniques for Analysis	30406	40
Project Organization Structure	N/A	N/A	Performance Management System	N/A	32
Applied Quality Assurance Operations	30964	15			
Cost Contracting	41532	40	<b>Schedule Management</b>		
Contract Analysis and Control (for Project Management)	40704	09	Course Title	Course No. or Sponsor	Duration (hrs)
Problem Solving & Decision Making	20114	24	PERT-CPM Workshop	41547	20
Basic Procurement	40693	40	Program Evaluation and Review Techniques	40945	24
Contract Management for Engineers	41522	40	Program Planning Network Risk Analysis	40949	20
Contract Planning	41529	40	Computer Programs: Artemis	N/A	N/A
Developing Work Statements for R&D Contracting	41535	32	Project II	N/A	N/A
Evaluating a Contractor's Performance	41536	40	Primavera		
Fundamentals of Contract Administration	40735	40	Timeline		
Fundamentals of Program Management	40935	40	Quicknet		
Government Contract Negotiation Techniques	40740	40			
Techniques of Negotiating	40780	24			
Government Contract Negotiations	40741	40			
Negotiations	41546	40			
Management Analysis and Review	40509	40			

Table 3. MSFC Program Control Training Courses (cont.)

Change Management			Information Management		
Course Title	Course No. or Sponsor	Duration (hrs)	Course Title	Course No. or Sponsor	Duration (hrs)
Configuration Management of Software	40930	24	Managing Information: Making Information Work for You	41558	02
Configuration Management Integrated Configuration Management	UAH	09	Workshop in Management Information Systems	90383	02
Advanced Configuration Management	UAH	40	Presenting Data in Graphs Charts and Tables	40515	24
Strategies & Techniques for Configuration Management	Tech Trng Corp.	24	Data Base Systems	90176	40
Basic Configuration Mgmt./ Advanced Config. Mgmt.	Tecn Trng Corp.	16			
Acquisition Techniques for Configuration Management Practitioners	CDM Consultants	32			
Basic Data Management	SCITEK	24			
Data Management Course, Number 15934	Tech Data Inc.	16			
Configuration Management II	Navy Conslid. Civ Pers Office	N/A			
Course I-Documentation and Change MGMS	Inst. of Config. Mgmt/Arizona		<b>Plans and Requirements</b>		
Course II-Requirement Specifications Review		24	Course Title	Course No. or Sponsor	Duration (hrs)
Course III-Configuration Definition & Documentation		24	Systems Engineering Process	NASA	36
Course IV-Engineering Change Control and Traceability		24	- Systems Engineering Process		
Course V-Change Boards Change Administration		24	- Mission Need Statement		
Course VI-Organize and Manage Requirements		24	- System Requirements/ Specifications		
Course X-CMII for Executives (Generic for Public)		08	- Implementation Plans		
Course XI-CMII for Executives (for Onsite)		04	- Baseline Reviews		
			SRM & QA Process	N/A	N/A
			Fundamentals of Logistics Management	40490	40