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SPACE TRANSPORTATION SYSTEMS
NASA AND COMMERCIALIZATION
PRESENTATION TO THE ADMINISTRATOR

JANUARY 1983

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THREE CATEGORIES OF EXPRESSIONS OF INTEREST

- I. NEW SYSTEMS AT NEW SITES.
- II. SYSTEMS AND ACTIVITIES COMPLEMENTARY TO STS.
- III. EXISTING ELV SYSTEMS.

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REVIEW APPROACH

I. DISCUSSIONS CONDUCTED WITH INTERESTED PARTIES:

SSI	FAIRCHILD	AEROJET
ARC TECH	ORBITAL SYSTEMS	LTV
TRANSPACE	McDONNELL DOUGLAS	ROCKWELL
GENERAL DYNAMICS	ORBITAL SYSTEMS LTD	DOD
MARTIN	ASTROTECH INC.	DOC
FEDERAL EXPRESS	GRUMMAN	BATTELLE
SPACE TRANS. CO.	BOEING	ECON

II. REVIEW CONDUCTED OF APPLICABLE LAWS, POLICIES, ETC.

III. REVIEWED IN DETAIL THE SERVICES CURRENTLY PROVIDED AND DETERMINED KEY DECISIONS AND ACTIONS REQUIRED TO IMPLEMENT EACH CATEGORY.

NEW SYSTEMS AT NEW SITES

DOMESTIC

1. SSI - CONESTOGA VEHICLE - MATAGORDA ISL., HAWAII
2. ARC TECHNOLOGY - (HYBRID-UNNAMED) - 200 MI OFF WEST COAST
3. PROJECT PRIVATE ENTERPRISE - VOLKS ROCKET - VARIOUS

NASA ACTIONS

PROVIDE TECHNICAL ADVICE AND SUPPORT TO STATE, FAA, AND FCC.

PROVIDE TECHNICAL ADVICE AND SUPPORT AS AGREED TO BY NASA.

FOREIGN

1. ESA/ARIANESPACE ARIANE - FRENCH GUIANA
2. GERMAN - ORTRAG - VARIOUS

NEW SYSTEMS AT NEW SITES

OTHER GOVERNMENT REQUIREMENTS

STATE DEPARTMENT - EXPORT LICENSE, NOTIFICATION OF LAUNCH

FAA - AUTHORIZATION TO UTILIZE AIRSPACE (FAR EXEMPTION)

FCC - FREQUENCY UTILIZATION

AT&FA - REGISTRATION OF ROCKET

NORAD - NOTIFICATION OF LAUNCH

SYSTEM PROPOSALS COMPLEMENTARY TO STS

ACTIVITY UNDERWAY

1. PAM D - McDONNELL DOUGLAS
2. MATERIALS PROCESSING - McDONNELL DOUGLAS

INITIATED ACTION

1. FIFTH ORBITER - SPACE TRANS. CO. (FEDERAL EXPRESS)
2. SRM-1X - ORBITAL SYSTEMS INC.
3. MARKETING - GRUMMAN, BOEING, USBI, MDAC, ROCKWELL, ETC.
4. PAYLOAD PROCESSING - ASTRO TECH INTERNATIONAL INC.

PLANNED ACTIONS

1. LEASE SATELLITE - FAIRCHILD
2. MATERIALS PROCESSING - GTI
3. MATERIALS PROCESSING - BALL AEROSPACE SYSTEMS
4. MATERIALS PROCESSING - JOHN DEERE & CO.
5. MATERIALS PROCESSING - DUPONT
6. MATERIALS PROCESSING - INCO
7. MATERIALS PROCESSING - UNION CARBIDE CORP.

NASA ACTIONS

REVIEW PROPOSALS, DETERMINE MERIT, DETERMINE IF COMPETITION REQUIRED
COORDINATE INTERAGENCY REQUIREMENTS
IF APPROVED ENTER JEA, MOU, OR CONTRACT AS REQUIRED

EXISTING ELV SYSTEMS

1. CENTAUR - GENERAL DYNAMICS, SSI
2. DELTA - TRANSPACE
3. TITAN - SPACE TRANS CO. (MOU WITH MARTIN, UTC, AEROJET)

NASA ACTIONS

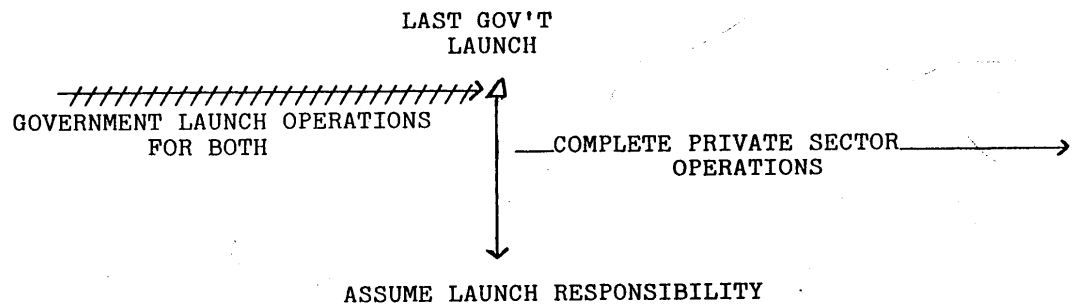
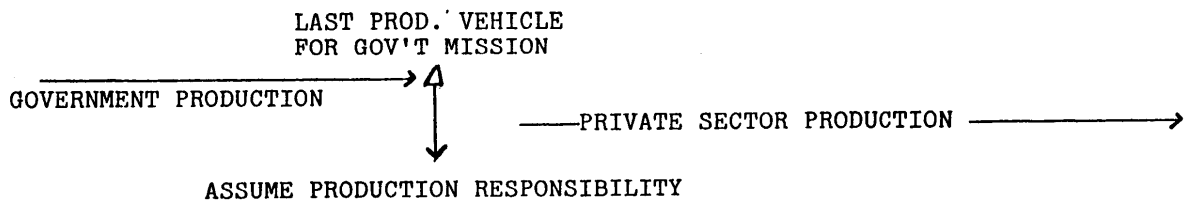
DECISIONS REQUIRED

INITIATE COMPETITION (AS DESIRED)

PLAN TRANSITION (DOD MISSIONS, NASA AND OTHER U.S. GOV'T MISSIONS,
C&F MISSIONS)

PROVIDE TECHNICAL ADVICE/ASSISTANCE IN LICENSING TO STATE,
FCC AND FAA

TYPICAL TRANSITION PLAN



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DOD/NASA DECISIONS REQUIRED FOR

GOVERNMENT OPERATED SYSTEMS

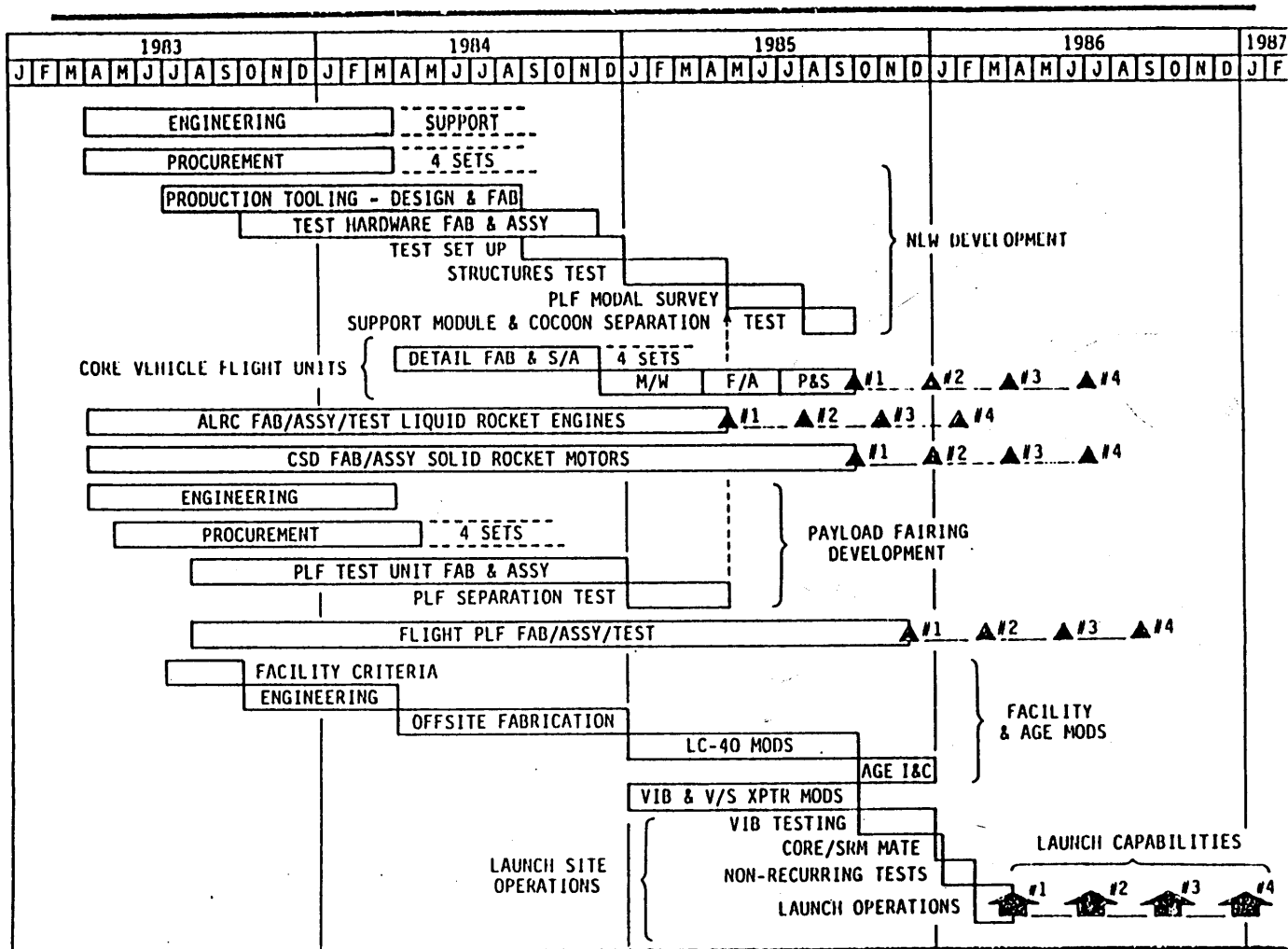
HARDWARE AND PRODUCTION CAPABILITIES

- 0 "SUNK" R&D COST RECOVERY ON CAPABILITY DEVELOPMENT
- 0 RENTAL, LEASE, OR USE PERMIT OF PRODUCTION AND PLANT TOOLING,
TEST EQUIPMENT DRAWINGS, PROCESSES AND PROCEDURES, ETC.
- 0 SALE OF GOVERNMENT SPARE PARTS INVENTORIES AND OVERHAUL AND
REPAIR CAPABILITIES (EXCEPTION REQUIRED)
- 0 MONOPOLY VS FREE MARKET

LAUNCH SITE CAPABILITIES

- 0 "SUNK" R&D COST RECOVERY ON CAPABILITY DEVELOPMENT
- 0 LEASE, RENTAL OR USE PERMIT SYSTEM UNIQUE FACILITIES TEST
EQUIPMENT AND GSE.
 - CONTROL OF MODIFICATIONS
- 0 USE OF LAUNCH SOFTWARE (INCLUDING TEST AND LAUNCH PROCEDURES)
- 0 JOINT USE OF CERTAIN OTHER FACILITIES
- 0 GOVERNMENT PROVIDED OPERATIONAL SUPPORT
- 0 GOVERNMENT PROVIDED BASE SUPPORT
- 0 SCHEDULING PRIORITIES
- 0 SAFETY REQUIREMENTS
- 0 MONOPOLY VS FREE MARKET

PROGRAM PLAN



HARDWARE/PRODUCTION CAPABILITIES - TITAN

CATEGORIES OF GOVERNMENT PROPERTY REQUIRED TO SUPPORT FABRICATION,
TEST, AND SHIPMENT OF VEHICLES

FACILITIES SUPPORT EQUIPMENT, I.E., CHEMICAL MILLING FACILITY,
COMPRESSOR HOUSE AND VERTICAL TEST FACILITY

HARDWARE PRODUCTION TOOLS, SPECIAL TOOLING, TEST TOOLING
AND SPECIAL TEST AND HANDLING EQUIPMENT

MACHINE TOOLS

AIR FORCE COMMERCIAL EQUIPMENT

ALL DOCUMENTATION USED DURING DESIGN, FABRICATION AND TEST.

LAUNCH SITE CAPABILITIES - TITAN
NEEDED FOR USE, MODIFICATION, CONTROL AND MAINTENANCE

VERTICAL INTEGRATION BUILDING (VIB)

LAUNCH COMPLEX 40 IN ITS ENTIRETY

TITAN TRANSPORTER SETS (4)

RAILROAD ROLLING STOCK

SRM SUPPORT FRAME AND STEMS

SOLID MOTOR ASSEMBLY BUILDING (SMAB) AND SRM SUPPORT AREAS

PAYLOAD PAIRING PROCESSING FACILITY

LC-41 PROPELLANT CONDITIONING EQUIPMENT

MECHANICAL AND ELECTRICAL AGE, TEST TOOLS FOR TITAN, SRMs AND ENGINES

OFFICE SPACE, SHOPS, AND WAREHOUSES

LIFE SUPPORT EQUIPMENT

SPARES FOR REAL PROPERTY INSTALLED EQUIPMENT

LAUNCH SITE CAPABILITIES - TITAN

JOINT USAGE

SKID STRIP

VIB BAYS, OFFICE SPACE, GN₂ FARMS AND DIESEL GENERATORS

RAILROAD TRACKS

PROPELLANT STORAGE AREAS

WAREHOUSE OFFICE SPACE

SMAB HIGH BAY, SLING STORAGE AND CRANE

ORDNANCE STORAGE AND TEST AREAS

ASSUMPTIONS ON DECISIONS REQUIRED BY USG

HARDWARE AND PRODUCTION CAPABILITIES

- 0 "SUNK" R&D COSTS WILL NOT BE RECOVERED
- 0 NOMINAL LEASE, RENTAL OR USE PERMIT CHARGES UTILIZING A STANDARD COMPUTATION PROCESS WILL BE ASSESSED FOR SYSTEM UNIQUE PRODUCTION AND PLANT CHECKOUT AND TESTING TOOLING AND EQUIPMENT
- 0 USE OF GOVERNMENT DRAWINGS, PROCESSES, PROCEDURES, ETC. WILL BE ALLOWED WITHOUT CHARGE BUT WITH RESTRICTIONS
- 0 GOVERNMENT INVENTORIES OF SPARE PARTS, MATERIALS AND ASSOCIATED CAPABILITIES EXCESS TO USG REQUIREMENTS WILL BE SOLD TO THE OPERATOR (EXCEPTION REQUIRED)

LAUNCH SITE CAPABILITIES

- 0 "SUNK" R&D COSTS WILL NOT BE RECOVERED
- 0 NOMINAL LEASE, RENTAL OR USE PERMIT CHARGES UTILIZING A STANDARD COMPUTATION PROCESS WILL BE ASSESSED FOR SYSTEM UNIQUE CAPABILITIES, E.G., LAUNCH PAD, BLOCKHOUSE, GSE AND RELATED EQUIPMENT
- 0 USG WILL CONTINUE TO PROVIDE SUPPORT TO PRIVATELY OPERATED SYSTEMS IN ACCORDANCE WITH AGREED TO SIRD, PRD, PSP, ETC.
- 0 CHARGING FOR GOVERNMENT SERVICES AND SUPPORT AT THE LAUNCH SITE WILL BE ON STS PRICING BASIS FOR SUPPORT TO PRIVATE SECTOR ACTIVITIES
- 0 USG MISSIONS WILL HAVE PRIORITY ACCESS TO USG FACILITIES (SCHEDULING ONLY)
- 0 PRIVATE OPERATOR WILL ASSUME COMPLETE RESPONSIBILITIES FOR OPERATION AND MAINTENANCE OF LAUNCH COMPLEX
- 0 PRIVATE OPERATOR MUST COMPLY WITH USG SAFETY AND ENVIRONMENTAL REQUIREMENTS

APPENDIX E

SUPPORT SERVICES AT ETR

The capability of the following support services is available for each mission to be launched from ETR.

Support Service	Available from		Available to	
	KSC	USAF	Vehicle	Payload*
Off-loading, loading flight hardware, and GSE at CCAFS	X	X**	-	X
Intrasite (ETR) transportation, handling, and storage of hardware and GSE	-	X	X	X
Use of a payload processing facility and a hazardous processing facility (DSTF and/or ESA-60) including industrial environmental control and clean room capability	X	X	X	X
Use of existing RD and voice communications capability, hardware data lines, and closed-circuit TV among the launch pad, blockhouse, Delta TM facility (Hangar AE), flight hardware processing facilities, including the DSTF, and flight hardware unique ground station on site	-	X	X	X
A 24-hour-day security of site perimeter, interior guard support, processing facilities, and launch complex and intrasite escort security	-	X	X	X
Office Space	X	X	X	X

*Payload is defined as all property provided by the User, including but not limited to the spacecraft, upper-stage, attach fittings, and spin table.

**User aircraft refueling available on a reimbursable basis (to USAF) as an optional service.

APPENDIX E (continued)

Support Service	Available from		Available to	
	KSC	USAF	Vehicle	Payload*
Safety support - participation in ground safety reviews, site procedure reviews, and operations monitoring for hazardous operations	X	X	X	X
Supply of minor quantities of hazardous materials (chemicals), nitrogen (gas, liquid), helium (gas), freon, and hydrazine	X	-	X	X
Fluids sampling and analyses	X	-	X	X
Photographic services	-	X	X	X
Technical shops support	-	X	X	X
Use available NASA test and equipment and calibration services on a noninterference basis	X	-	X	X
"Scope" support, including support of payload propellant "cart" operations	X	-	X	X
Ordnance storage and handling including receiving inspection, bridgewire checks, leak tests, motor buildup, motor cold soak, and X-ray and propellant handling and storage	X	-	X	X
Emergency medical services, fire protection	-	X	X	X
Coordination and planning of site activities, universal documentation system support, technical library services	X	-	X	X
Spin testing in DSTF	X	-	X	X

*Payload is defined as all property provided by the user, including but not limited to the spacecraft, upper-stage, attach fittings, and spin table.

IMPLEMENTATION ASSUMPTIONS - LAUNCH SITE

GOVERNMENT FACILITIES AND SERVICES

- 0 OBTAIN USE OF COMMON SUPPORT CAPABILITIES
 - I.E., RANGE SUPPORT - NEGOTIATE WITH ESMR
 - KSC SUPPORT - NEGOTIATE WITH KSC - HANGAR AE, TM STATION, MDC,
COMPUTER SUPPORT PAYLOAD
PROCESSING FACILITIES, ETC.
- 0 ESTABLISH WORKING AGREEMENTS ON JOINT USE FACILITIES
 - COMPLEX 36 BLOCKHOUSE, DSTF, ETC.
- 0 NASA LAUNCH SYSTEM TEST TEAM WOULD NOT BE INVOLVED IN LAUNCH PROCESSING
- 0 NASA/RANGE WOULD MAINTAIN OVERALL SCHEDULE CONTROL AND INTEGRATION
- 0 KSC SAFETY WOULD NOT BE INVOLVED IN LAUNCH PROCESSING, RANGE SAFETY
WOULD MAINTAIN INVOLVEMENT, AS NEGOTIATED
- 0 KSC QUALITY CONTROL WOULD NOT BE INVOLVED IN LAUNCH PROCESSING
- 0 NASA WOULD CONTROL FACILITY CONFIGURATION OF JOINT USE FACILITIES

IMPLEMENTATION ASSUMPTIONS - LAUNCH SITE

PRIVATE SECTOR DEDICATED FACILITIES (E.G., COMPLEX 17) AND EQUIPMENT

- 0 OPERATOR RESPONSIBLE FOR CONFIGURATION CONTROL, OPERATION AND MAINTENANCE
- 0 OPERATOR RESPONSIBLE FOR AWARENESS OF AND COMPLIANCE WITH REGULATIONS
(OSHA, KSC, RANGE)
- 0 TEST INTEGRATION WITH KSC AND RANGE WOULD BE DONE BY OPERATOR
- 0 OPERATOR RESPONSIBLE FOR UNIQUE SPARES
- 0 OPERATOR RESPONSIBLE FOR PREPARATION OF PRD'S AND SIRD'S INCLUDING
PAYLOAD REQUIREMENTS

LEGAL REVIEW
INTERNATIONAL LAW

NON-GOVERNMENTAL SPACE ACTIVITIES INCLUDING LAUNCH OPERATIONS ARE NOT
PROHIBITED BY INTERNATIONAL LAW.

GOVERNMENT HAS A RESPONSIBILITY UNDER INTERNATIONAL LAW TO REGULATE NON-
GOVERNMENTAL SPACE LAUNCH OPERATIONS

- O PRIVATE LAUNCH OPERATIONS ARE REGULATED THRU AD HOC
APPLICATION OF NONSPECIFIC STATUTORY AUTHORITY
- O CURRENT REGULATORY SCHEME HAS PROVEN TO BE ADEQUATE BUT IF
COMMERCIAL LAUNCH OPERATIONS PROLIFERATE A REVISED REGULATORY
SCHEME MAY BE NEEDED

GOVERNMENT IS LIABLE FOR DAMAGE OUTSIDE THE UNITED STATES CAUSED BY PRIVATE
LAUNCHES ORIGINATING IN UNITED STATES TERRITORY

LEGAL REVIEW

REGULATION

THE CURRENT SYSTEM WORKS BUT HAS SHORTCOMINGS

- 0 NO SPECIFIC CRITERIA FOR APPROVAL/DISAPPROVAL
- 0 NO MECHANISM FOR ACTUAL SUPERVISION/PAYLOAD VERIFICATION
- 0 ARMS EXPORT CONTROL ACT PROBABLY CANNOT BE APPLIED TO SUB-ORBITAL TEST FLIGHTS AND SOUNDING ROCKETS LAUNCHED/RECOVERED ENTIRELY WITHIN U.S. (NO LEGAL DEFINITION OF "SPACE" OR WHAT IS "OUTSIDE U.S.")

LEGISLATION TO CHANGE REGULATORY SCHEME WAS INTRODUCED IN 97TH CONGRESS

- 0 CANNON BILL WOULD MAKE FAA THE LEAD AGENCY
- 0 AKAKA BILL WOULD MAKE COMMERCE THE LEAD AGENCY

LEGAL REVIEW

CATEGORY III OPERATIONS

NASA HAS AUTHORITY TO LEASE OR ALLOW THE USE OF ITS REAL AND PERSONAL
PROPERTY IN SUPPORT OF COMMERCIAL SPACE ACTIVITIES

- 0 NOT UNLIMITED AUTHORITY
- 0 FISCAL RESTRICTIONS
- 0 POLICY CONSIDERATIONS

CURRENT LAW REQUIRES THAT NASA RECEIVE ONLY MONEY AS CONSIDERATION
FOR A LEASE

- 0 MONEYS DERIVED FROM RENTALS MUST GO TO TREASURY
- 0 MILITARY DEPARTMENTS HAVE A PARTIAL EXEMPTION

NASA MAY LEASE LAND AND REQUIRE LESSEE TO REMOVE AT HIS OWN EXPENSE
BUILDINGS AND IMPROVEMENTS, OR PROPERTY LEFT ON PREMISES BECOMES
PROPERTY OF THE UNITED STATES WITHOUT COMPENSATION THEREFOR.

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LEGAL REVIEW

CATEGORY III OPERATIONS

A NUMBER OF LEGAL RESTRICTIONS OR ISSUES NEED TO BE CONSIDERED BY
FIRMS INTERESTED IN COMMERCIAL SPACE OPERATIONS

- 0 ANTITRUST
- 0 PATENT LICENSING
- 0 GOVERNMENT PERMISSION DOES NOT IMPLY LEGAL
AUTHORITY TO ORCHESTRATE PROCESS

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CRITERIA FOR COMMERCIALIZATION

COMMERCIALIZATION OF NOT INHERENTLY GOVERNMENTAL ACTIVITIES SHOULD:

- ENHANCE THE ECONOMIC BASE OF THE COUNTRY,
- LEAD TO EXPANDED TAX REVENUES,
- BENEFIT BOTH THE GOVERNMENT AND THE PRIVATE SECTOR,
- BE DONE IN AN ENVIRONMENT OF AN OPEN MARKETPLACE,
- ENCOURAGE FREE ENTERPRISE, AND
- ENCOURAGE HEALTHY COMPETITION ON BOTH A DOMESTIC AND INTERNATIONAL SCALE

CONCEPTS BEARING ON COMMERCIALIZATION

DEFINITION OF COMMERCIALIZATION: PRIVATE SECTOR MANAGEMENT AND OPERATION OF AN ACTIVITY AS A BUSINESS FOR PROFIT.

GOVERNMENTAL ACTIVITY	VS	NON-GOVERNMENTAL ACTIVITY
GOVERNMENT OPERATIONS	VS	PRIVATE SECTOR OPERATIONS
GOVERNMENT R&D	VS	PRIVATE INDUSTRY R&D
GOVERNMENT COST	VS	GOVERNMENT SAVINGS
TAX REVENUES	VS	TAX INCENTIVES
OPEN MARKETPLACE	VS	MONOPOLY
FREE ENTERPRISE	VS	GOVERNMENT SUBSIDY
PARTIAL COMMERCIALIZATION	VS	COMPLETE COMMERCIALIZATION
GRADUAL COMMERCIALIZATION	VS	IMMEDIATE COMMERCIALIZATION
GOVERNMENT INVESTMENT	VS	PRIVATE INVESTMENT

CRITERIA FOR EVALUATION OF PROPOSALS

FEASIBILITY

DEMONSTRATES TECHNICAL AND MANAGEMENT CAPABILITIES
DEMONSTRATES FINANCIAL CAPABILITIES

BUSINESS PLAN

BASIC TERMS AND CONDITIONS
GUARANTEES NEEDED (I.E., INDEMNIFICATION, ETC.)
PROPOSED LEASES AND/OR PURCHASES FROM GOVERNMENT
GOVERNMENT SUPPORT NEEDED
SPECIAL INCENTIVES REQUIRED
RECOMMENDED REGULATION
TIMEFRAME OF TRANSITION
OTHER FACTORS

BENEFITS TO THE GOVERNMENT

ADDRESSES FOREIGN SECTOR CONCERNS

ADDRESSES NATIONAL SECURITY CONCERNS