



SPACE LAW INTRODUCTION

NEEP 533 LECTURE 37

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OUTER SPACE TREATY OF 1967 GUIDELINES FOR LUNAR OPERATIONS

- **BINDING RULES OF INTERNATIONAL LAW APPLY**
- **RESOURCES MUST BE USED FOR PEACEFUL PURPOSES**
- **RESOURCES MUST BE USED “FOR THE BENEFIT AND IN THE INTERESTS OF ALL COUNTRIES”**
- **NO CLAIM OF SOVEREIGNTY CAN BE MADE AND RECIPROCAL FREE ACCESS CANNOT BE DENIED**
- **CONTAMINATION OF THE MOON IS TO BE AVOIDED**
- **COOPERATION AND MUTUAL ASSISTANCE SHALL BE PROVIDED**
- **ADVANCED NOTIFICATION AND CONSULTATION RELATIVE TO POTENTIAL INTERFERENCE WITH OTHERS**
- **LIABLE FOR ACTIVITIES IN SPACE**
- **OPENNESS AND DATA EXCHANGE WITH OTHER PARTIES TO THE TREATY**

CHRONOLOGY OF INTERNATIONAL AGREEMENTS RELEVANT TO SPACE

EARTH

ANTARCTIC TREATY

LAW OF THE SEA CONVENTION

ANTARCTIC MINERAL RESOURCES CONVENTION

ANTARCTIC ENVIRONMENTAL PROTOCOL

RIO ENVIRONMENTAL AGREEMENTS

LAW OF THE SEA RE-NEGOTIATED "AGREEMENT"

KYOTO AGREEMENT

SENATE RATIFICATION "LAW OF THE SEA" ?

SPACE

1959

1964

1967

1968

1972

1975

1976

1982

1988

1991

1992

1994

1997

2004

INTELSAT AGREEMENT

OUTER SPACE TREATY

RESCUE/RETURN OF ASTRONAUTS, ETC.

LIABILITY FOR DAMAGE IN SPACE

REGISTRATION OF OBJECTS LAUNCHED

IMMARSAT AGREEMENT

MOON AGREEMENT

SPACE STATION AGREEMENT

ITALICS - NOT RATIFIED BY U.S.

RED - ONLY SPACE TREATY DIRECTLY RELEVANT TO RESOURCES TO WHICH THE U.S. IS A PARTY

COMMERCIAL SPACE ACT OF 1997

COMMERCIAL SPACE ACT OF 1998

COMMERCIAL SPACE ACT OF 2003

2003

THE MOON AGREEMENT - 1979

GENERAL*

- ENTERED INTO FORCE IN 1984 - 9 COUNTRIES HAVE RATIFIED / 5 MORE HAVE SIGNED INCLUDING INDIA AND FRANCE(?)
 - MAJOR SPACE POWERS HAVE NOT RATIFIED, INCLUDING U.S., RUSSIA, CHINA, AND JAPAN - THUS, AGREEMENT REMAINS DORMANT
- REPEATS THE OBLIGATIONS IN THE OUTER SPACE TREATY
- NEW OBLIGATIONS/RIGHTS INCLUDE:
 - SAMPLES COULD BE REMOVE AND RETAINED
 - RESOURCES MAY BE USED TO SUPPORT ACTIVITIES ON THE MOON
 - PREVENTION OF THE DISRUPTION OF THE EXISTING ENVIRONMENTAL BALANCE
 - FREE ACCESS OF OTHER PARTIES CANNOT BE IMPEDED
 - THE STATEMENT "THE MOON AND ITS NATURAL RESOURCES ARE THE COMMON HERITAGE OF MANKIND.."

THE MOON AGREEMENT - 1979

GENERAL* - 2

- **ARTICLE 11 COMMITS TO UNDERTAKE TO ESTABLISH AN INTERNATIONAL REGIME TO GOVERN THE EXPLOITATION OF LUNAR RESOURCES "AS SUCH EXPLOITATION IS ABOUT TO BECOME FEASIBLE"**
 - ORDERLY AND SAFE DEVELOPMENT
 - RATIONAL MANAGEMENT
 - EXPANSION OF USE
 - EQUITABLE (NOT DEFINED) SHARING OF THE BENEFITS
- **INFORM THE PUBLIC OF ANY NATURAL RESOURCES DISCOVERED (VAGUE AS TO DEFINITION)**
 - POTENTIAL CONFLICT WITH SEC REGULATIONS

THE MOON AGREEMENT - 1979

PROBLEMS -1

- **U.S. DID NOT SIGN OR RATIFY ALTHOUGH IT HELPED TO DRAFT IT IN UN COMMITTEE**
 - **SENATE CONCERNS ABOUT THE INTERPRETATION OF THE "COMMON HERITAGE" LANGUAGE IN LIGHT OF THE HISTORY OF THE LAW OF THE SEA CONVENTION**
- **ONE VIEW IS THAT THE PHRASE CONTEMPLATES A MORATORIUM ON USE OF LUNAR RESOURCES**

THE MOON AGREEMENT - 1979

PROBLEMS -2

- **OTHER VIEW IS THAT THE PHRASE HAS NEVER HAD A FIXED MEANING**
 - **NEGOTIATING HISTORY SUPPORTS THIS VIEW**
- **EXTENT OF AGREEMENT BY DRAFTERS ON "COMMON HERITAGE" PHRASE AS IT MIGHT RELATE TO LUNAR RESOURCES**
 - **MINING AREAS NOT SUBJECT TO NATIONAL APPROPRIATION**
 - **SHARED MANAGEMENT RESPONSIBILITY**
 - **SHARING OF ECONOMIC BENEFITS**
 - **USE FOR PEACEFUL PURPOSES**
 - **FREE AND OPEN SCIENTIFIC RESEARCH**
 - **PROTECTION FROM ENVIRONMENTAL HARM**
- **LAW OF THE SEA HISTORY CREATES A DEFINITION THAT, IF USED AS A PRECEDENT, WOULD PRECLUDE NATIONAL OR PRIVATE ACQUISITION OF SPACE RESOURCES**

THE MOON AGREEMENT - 1979

PROBLEMS -3

- **MANAGEMENT REGIME MANDATED BUT NOT ESTABLISHED**
 - **ARTICLE 11 EXPRESSLY CONTEMPLATES A SEPARATE NEGOTIATION WITHOUT PRECONDITIONS OTHER THAN THOSE ALREADY ACCEPTED FOR OUTER SPACE ACTIVITIES**
 - **ANY DISAGREEING STATE WILL NOT BE LEGALLY BOUND BY WHATEVER MANAGEMENT REGIME IS DEFINED BY THIS NEGOTIATION**
 - **ARTICLE 11, HOWEVER, CREATES GREAT UNCERTAINTY AND POTENTIAL DISCORD**
 - **WOULD PREVENT RAISING CAPITAL**
 - **MIGHT PREVENT GAINING CONGRESSIONAL SUPPORT FOR A LUNAR RESOURCE INITIATIVE**

THE MOON AGREEMENT - 1979

PROBLEMS -4

- IT DOES NOT APPEAR THAT THE TREATY'S USE OF THE PHRASE "RESOURCES MAY BE USED TO SUPPORT ACTIVITIES ON THE MOON" WAS INTENDED TO PRECLUDE BROADER USE OF SUCH RESOURCES
 - NOT CERTAIN HOW OTHERS WOULD ATTEMPT TO INTERPRET PHRASE
- DETAILED ENVIRONMENTAL OBLIGATIONS LEFT OPEN
- NO SCHEDULED CONSULTATIONS HELD IN 1994 OR SINCE DUE TO LACK OF INTEREST IN RETURNING TO THE MOON.
 - THIS DISINTEREST MAY HAVE DISAPPEARED IN 2004 WITH U.S., CHINA, AND INDIA ANNOUNCING RENEWED INTEREST

THE MOON AGREEMENT - 1979

PROBLEMS -5

- EXPANSION OF 1967 PROHIBITION ON CLAIMING SOVERIGNTY TO INCLUDE “BY MEANS OF USE OR OCCUPATION, OR BY ANY OTHER MEANS”
- STRONG PROHIBITION ON OWNERSHIP OF "NATURAL RESOURCES IN PLACE...SURFACE OR THE SUBSURFACE OF THE MOON..." ALONG WITH PROHIBITION OF NON-INTERNATIONAL "EXPLOITATION OF NATURAL RESOURCES".
- WHAT WOULD BE THE QUANTITATIVE MEANING OF "AN EQUITABLE SHARING OF ALL STATES PARTIES IN THE BENEFITS DERIVED FROM [THE NATURAL] RESOURCES [OF THE MOON]..." ?

THE MOON AGREEMENT - 1979

PROBLEMS -6

- MANDATES FOR
 - (1) AN INTERNATIONAL MANAGEMENT REGIME,
 - (2) ONE NATION-ONE VOTE RULE, AND
 - (3) A “REVIEW CONFERENCE” WOULD CREATE A *DE FACTO* MORATORIUM ON PRIVATE SECTOR ACTIVITIES
- RECOMMENDATION:
 - U.S. SHOULD UNEQUIVOCALLY “WALK AWAY” FROM OR “DEEP SIX” THIS AGREEMENT SO AS TO REMOVE ANY RESIDUAL UNCERTAINTY THAT WE WILL AGREE TO IT
 - IF ONE BELIEVES THAT LUNAR RESOURCES ARE IMPORTANT TO THE FUTURE OF HUMANKIND, U.S. ENTREPRENEURS WILL NEED TO “MAKE IT SO”

INTELSAT AGREEMENT - 1964

MAJOR PROVISIONS -1

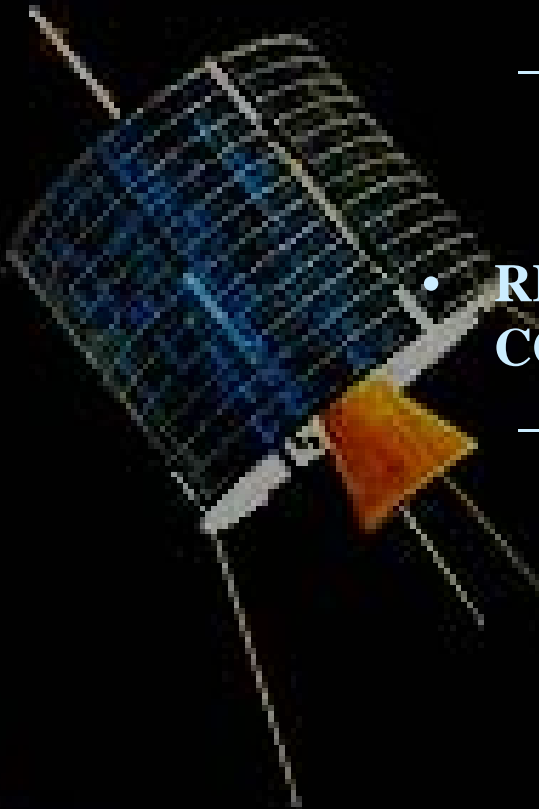
- RESULT OF 1963 KENNEDY DECISION TO SHARE U.S. COMMUNICATIONS TECHNOLOGY WITH THE WORLD
- PURPOSE TO PROVIDE INTERNATIONAL PUBLIC TELECOMMUNICATIONS VIA SATELLITES
- USER-BASED CONTROL, I.E., VOTING SHARES BASED ON PERCENT UTILIZATION OF THE SYSTEM
- NON-DISCRIMINATORY PRICING STRUCTURE FOR ITS SERVICES
- THINLY USED LINKS SUBSIDIZED



INTELSAT AGREEMENT - 1964

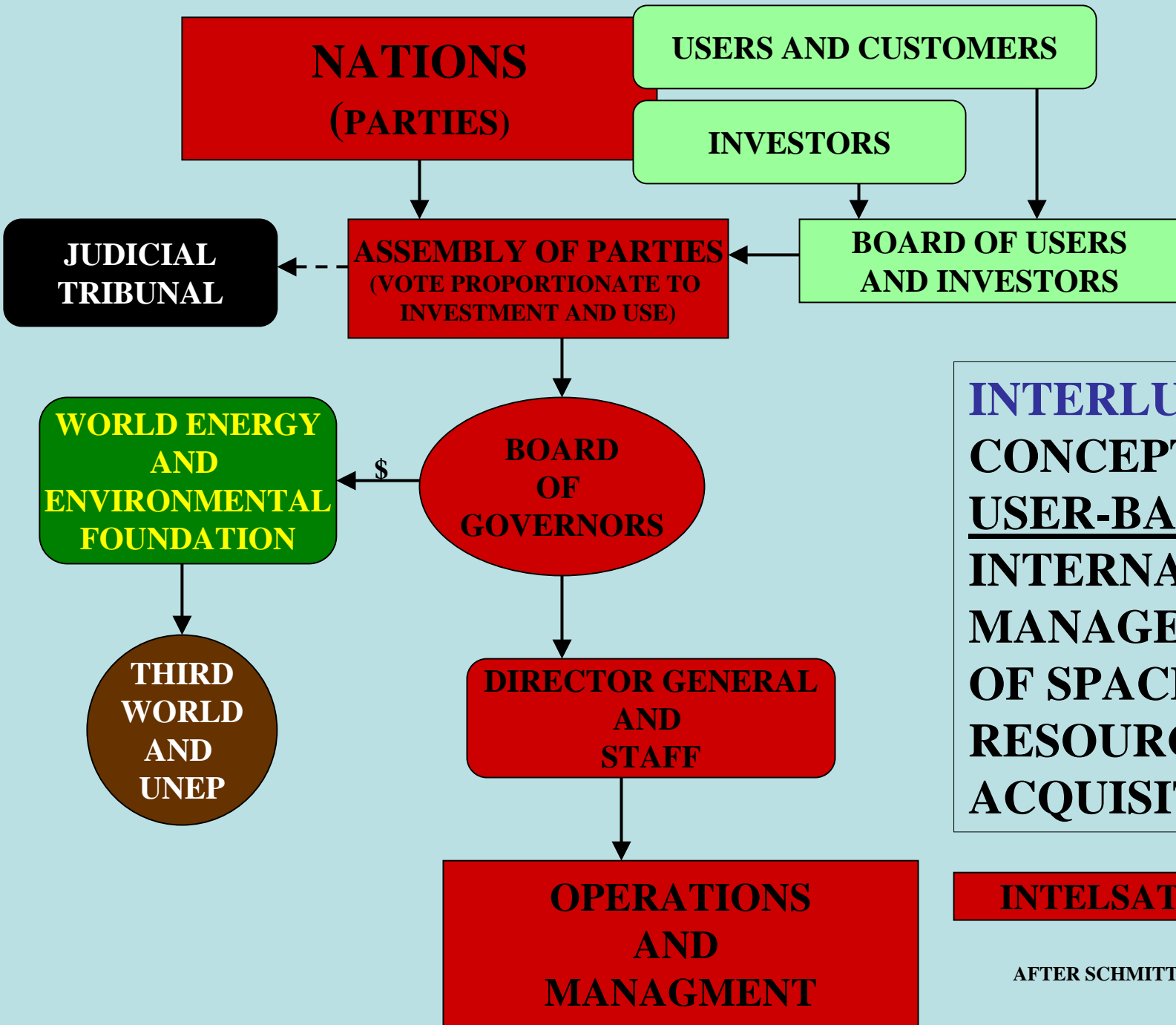
MAJOR PROVISIONS - 2

- U.S. INITIALLY WOULD HAVE HAD MAJORITY CONTROL BUT VOLUNTARILY LIMITED SHARE TO 40% (NOW MUCH LESS)
 - ORGANIZED TRAINING PROGRAM FOR THIRD WORLD NATIONS
 - U.S. TELECOMMUNICATIONS TRAINING INSTITUTE A RECENT CLONE
- RECENTLY REORGANIZED INTO A PUBLIC CORPORATION
 - MAJOR PROBLEM HAS BECAME INABILITY TO COMPETE WITH PRIVATE COMMUNICATIONS SYSTEMS DUE TO REQUIREMENT TO SUBSIDIZE THINLY USED LINKS



INMARSAT AGREEMENT - 1976

- SAME STRUCTURE AS INTELSAT FOR MOBILE MARITIME COMMUNICATIONS
- EXPANDED INTO LAND MOBILE COMMUNICATIONS
- SPUN OFF A PUBLIC CORPORATION TO COMPETE IN SATELLITE-BASED MOBILE COMMUNICATIONS - FAILED
- LESSONS LEARNED FROM INTELSAT AND IMARSAT EXPERIENCE
 - USER-BASED, INTERNATIONAL ORGANIZATIONS LIKE INTELSAT AND INMARSAT, WITH NARROW AND ACHIEVABLE OBJECTIVES, WILL WORK, AT LEAST UNTIL COMPETITIVE SERVICES BECOME INEVITABLE
 - EVERY PARTY HAS ALWAYS PAID THEIR BILLS TO RETAIN WHAT IS PERCEIVED TO BE INDISPENSABLE SERVICE
 - DESIGNED TO IMPROVE AND EXPAND SERVICE TO AN EXISTING MARKET



INTERLUNE: A CONCEPT FOR USER-BASED INTERNATIONAL MANAGEMENT OF SPACE RESOURCES ACQUISITION

INTELSAT MODEL

AFTER SCHMITT, 1992, SPACE 92, ASCE

INTERLUNE CONCEPT

ENTITIES INVOLVED

- **NATIONS**
 - TRADITIONAL PARTIES TO TREATIES AND INTERNATIONAL AGREEMENTS
- **ASSEMBLY OF PARTIES**
 - MEMBER NATIONS
 - POLICY AUTHORITY
 - ~ SHAREHOLDERS - VOTE PROPORTIONAL TO CONTRIBUTIONS
- **BOARD OF GOVERNORS**
 - MAJOR CONTRIBUTING NATIONS
 - OPERATIONAL AUTHORITY OVER THE DIRECTOR GENERAL
 - ~ BOARD OF DIRECTORS
- **DIRECTOR GENERAL AND STAFF**
 - OPERATION AND MANAGEMENT
- **USERS AND CUSTOMERS**
- **INVESTORS**
 - NON-TRADITIONAL PARTIES BUT NOW PART OF THE INTELSAT AND INMARSAT PUBLIC CORPORATIONS
- **BOARD OF USERS AND INVESTORS**
 - REPRESENTED ON THE BOARD OF GOVERNORS
 - PRESENT RECOMMENDATIONS AFFECTING THE INTERESTS OF USERS AND INVESTORS
 - INFLUENCE A FUNCTION OF THE LEVEL OF DEPENDENCE ON INVESTMENT CAPITAL AND USER PAYMENTS
- **WORLD HE-3 ENERGY AND ENVIRONMENT FOUNDATION**
 - RECOGNIZES "COMMON HERITAGE" AND "ENVIRONMENTAL HERITAGE" THEMES OF MODERN INTERNATIONAL LAW
 - THIRD WORLD NATIONS AND UNEP WOULD BE AMONG THE BENEFICIARIES
 - ASSIST IN THE BROAD UTILIZATION OF FUSION POWER
 - ASSIST IN COUNTERING THE EFFECTS OF GLOBAL CHANGE WHATEVER ITS CAUSE MAY BE
- **JUDICIAL TRIBUNAL**
 - FINAL ARBITER OF INTERNAL DISPUTES RELATED TO INTERPRETATION OF THE CHARTER
 - FINAL COURT OF APPEALS IN CRIMINAL AND CIVIL MATTERS

INTERLUNE - 2

PROVISION FOR SELF-DETERMINATION

- **SEATS FOR PERMANENT SETTLERS ON**
 - **THE ASSEMBLY OF PARTIES**
 - **BOARD OF GOVERNORS**
 - **JUDICIAL TRIBUNAL**
- **INCENTIVE STOCK COMPENSATION FOR PERMANENT SETTLERS**
- **PROVISION FOR ACCUMULATION OF VOTING SHARES BY PERMANENT SETTLERS**
- **RECOGNITION THAT THE SUCCESS OF INTERLUNE WILL ULTIMATELY GUARANTEE POLITICAL AND FINANCIAL CONTROL IF DESIRED**
 - **COULD ALLY WITH OTHER TERRESTRIAL INTERESTS**

INTERLUNE -3

ANCILLARY GOALS

- **DEVELOP A CUSTOMER BASE ON EARTH**
- **SEEK A COMPETITIVE RETURN ON INVESTMENT (ROI)**
- **ENSURE THE NEUTRALITY AND SECURITY OF ITS ACTIVITIES**
- **IMPLEMENTATION WILL BE DIFFICULT WITHOUT AN AGGRESSIVE COMMITMENT BY THE U.S.**
 - **MOON AGREEMENT PROBABLY CLOSED THE WINDOW OF OPPORTUNITY ON THIS OPTION**

INTERNATIONAL SPACE STATION (ISS) INTERGOVERNMENTAL AGREEMENT (IGA) OF 1988/1998 -1

- **SIGNED INITIALLY BY US, EUROPE (ESA), JAPAN, AND CANADA**
- **PARTIALLY BASED ON ANTARCTIC AND SPACE TREATY-LIKE ARRANGEMENTS**
- **INNOVATIVE PROVISION ON CRIMINAL JURISDICTION**
 - **????????????????**
- **EACH PARTY RESPONSIBLE FOR FUNDING AND BUILDING ITS CONTRIBUTION**
 - **U.S. FUNDED MUCH OF RUSSIAN EFFORT**
- **U.S. (NASA) RESPONSIBLE FOR LAUNCH, INTEGRATION, AND OVERALL MANAGEMENT**
 - **COMPROMISED NOW BY SHUTTLE STAND-DOWN**
- **WITHDRAWAL ALLOWED WITH 1 YEAR NOTICE**

INTERNATIONAL SPACE STATION (ISS) INTERGOVERNMENTAL AGREEMENT (IGA) OF 1988/1998 -2

- **RUSSIA INVITED TO JOIN AFTER SEVERAL REDESIGNS OF ISS**
 - **FOREIGN POLICY OBJECTIVES AND ALLEGED COST SAVINGS**
 - **REVISED IGA (1998) WITH 15 COUNTRIES SIGNING**
 - **PHASE I (1994-1998):**
 - **JOINT SPACE SHUTTLE AND MIR ACTIVITIES**
 - **PHASE II (1997-):**
 - **RUSSIA WOULD BUILD AND LAUNCH**
 - » **CENTRAL CORE MODULE (PROVIDING GN&C)**
 - » **PROVIDE RE-BOOST THROUGH A PROGRESS MODULE**
 - » **CREW RETURN VEHICLES (SOYUZ) IN SUPPORT OF U.S. POWER AND HABITATION MODULES PROVIDING FOR A CREW OF 6 (NOW CREW OF 2 WITH SHUTTLE STAND-DOWN)**
 - **U.S. WOULD PROVIDE BACK-UP CREW RETURN MODULE (NOW DEPENDS ON CEV IN 2008?)**

INTERNATIONAL SPACE STATION (ISS) INTERGOVERNMENTAL AGREEMENT (IGA) OF 1988/1998 -3



- **PHASE III (2000-2004 AND NOW SLIPPING TO 2010):**
 - **EUROPEAN, JAPANESE, CANADIAN, AND RUSSIAN RESEARCH MODULES TO BE ADDED (ALL CANCELLED OR ON HOLD).**

- **CREW COMMAND AGREEMENT REACHED IN NOVEMBER 1997**
 - **US COMMAND FOR FLIGHTS ONE AND THREE**
 - **RUSSIAN COMMAND FOR FLIGHTS TWO AND FOUR**
 - **ALTERNATE SUBSEQUENTLY**

INTERNATIONAL SPACE STATION (ISS)

ISSUES WITH RESPECT TO RUSSIA

- **POLITICAL STABILITY OF RUSSIA / RELIABILITY OF NASA AS MANAGER / LENGTH OF SHUTTLE STAND-DOWN (2004)**
- **RELATIONS BETWEEN RUSSIA AND THE U.S. RELATIVE TO OTHER INTERNATIONAL ISSUES (MISSILE DEFENSE, IRAQ, NORTH KOREA, CHINA, ETC.)**
- **ADEQUATE FUNDING FOR ITS COMMITMENTS**
- **CHANGE IN RUSSIAN PROGRAM LEADERSHIP (2004)**
- **RUSSIAN PARTICIPATION ORIGINALLY LINKED TO ITS ADHERENCE TO THE (BALLISTIC) MISSILE TECHNOLOGY CONTROL REGIME (MTCR)**
- **ORIGINAL SAVINGS (2 YEARS AND \$4 BILLION) DISAPPEARED SO NOT GREAT SUPPORT IN CONGRESS.**
- **RUSSIAN LAUNCHES DEPEND ON GOOD RELATIONS WITH BOTH KAZAKISTAN AND UKRAINE.**



SOYUS

INTERNATIONAL SPACE STATION (ISS)

ISSUES WITH RESPECT TO NASA

- **U.S. POLICY NOW TO DE-EMPHASIZE ISS AND SHUTTLE**
 - **FAVOR DEEP SPACE EXPLORATION EXCEPT IN BIOMEDICINE**
- **NASA'S OWN TECHNICAL AND POLITICAL ISSUES ARE FORMIDABLE**
 - **>\$5 BILLION OVER-RUN BETWEEN 2000 AND 2001 IN A \$25 BILLION PROGRAM**
 - **VIOLATION OF CONGRESSIONALLY MANDATED CAP OF \$25 BILLION**
 - **MAJOR PROGRAMS HAVE BEEN MANAGERIALLY DIFFICIENT**
 - **NO OVER-ALL PROGRAM MANAGEMENT PLANS**
 - **NO FINANCIAL MANAGEMENT PLANS (STILL PROBLEM IN 2004)**
 - **NO RISK MANAGEMENT PLANS**
 - **THREE INDEPENDENT AUDITS OF ISS COULD NOT TRACE NASA EXPENDITURES UNDER GOLDIN**
 - **ANOTHER AUDIT BY GAO IN 2004 HAD SAME PROBLEM**
- **SHUTTLE STAND-DOWN**
 - **FUTURE SHUTTLE OPERATIONS AND FUNDING ARE UNCERTAIN**

INTERNATIONAL SPACE STATION (ISS)

ISSUES WITH RESPECT TO NASA

- **EXTRAVEHICULAR ACTIVITY REQUIREMENTS PARTICULARLY AS ISS AGES**
- **CONGRESSIONAL SUPPORT IF THERE IS A MAJOR PROBLEM**
- **RUSSIAN LEVERAGE WILL CONTINUE TO BE ANNOYING IF NOT DANGEROUS**
 - **NASA'S CURRENT JUSTIFICATION FOR CONTINUING WORK WITH RUSSIA**
 - **TOTALLY DEPENDENT FOR ACCESS UNTIL AT LEAST MARCH 2005**
 - **NEED RUSSIAN MIR EXPERIENCE FOR SUCCESSFUL ISS**
 - **NO ALTERNATIVE EXCEPT DEVELOPMENT OF LONG DURATION SHUTTLES AND/OR CEV (2008)**
 - **U.S. JUSTIFICATION FOR CONTINUING WORK WITH RUSSIA**
 - **KEEP RUSSIAN SCIENTISTS AND ENGINEERS EMPLOYED AND AWAY FROM EMPLOYMENT BY ROGUE NATIONS**
 - **LITTLE CHOICE NOW WITH ISS IN ORBIT AND NO SHUTTLE**

INTERNATIONAL SPACE STATION (ISS)

LESSONS LEARNED?

- **DO NOT HAVE A PARTNER IN THE CRITICAL PATH TO SUCCESS**
- **DO NOT NEGOTIATE AGREEMENTS PIECEMEAL.**
- **INSURE THAT ALL PARTIES HAVE A VESTED INTEREST IN THE SUCCESS OF THE ENTERPRISE.**
- **START WITH AS SIMPLE AN ENGINEERING AND OPERATIONAL DESIGN AS THE PRINCIPLE GOAL OF THE ENTERPRISE PERMITS.**
 - **ALLOW FOR GROWTH**
 - **PLAN ON INDEFINITE LIFE FOR THE FACILITY (MINIMUM EVA MAINTENANCE)**
- **ALTHOUGH DEVELOPMENTS HAVE REPEATEDLY ENDANGERED THE SUCCESS OF THIS AGREEMENT, IT DOES PROVIDE SOME PRECEDENTS ON COOPERATION BETWEEN PARTNERS EACH WITH SIGNIFICANT TECHNICAL AND FINANCIAL RESOURCES TO BRING TO THE TABLE.**
 - **HAD THE INTELSAT MODEL BEEN USED, THE SITUATION MIGHT BE BETTER FOR ALL PARTIES**

INTERNATIONAL SPACE STATION (ISS) CHALLENGES FOR THE “NEW NASA” -1

- **REPAIR PROGRAM AND FINANCIAL MANAGEMENT STRUCTURE**
 - RATIONALIZE HEADQUARTERS MANAGEMENT STRUCTURE
 - NEEDS ONLY 5 LINE REPORTING UNITS VS. CURRENT 24
 - SPIN-OFF SPACE SHUTTLE AND ISS INTO SEPARATELY MANAGED SUBSIDERARIES?
- **REBUILD SKILL LEVELS REDUCED BY GOLDIN’S INDISCRIMINATE PERSONNEL CUTS AND RETIREMENTS**
 - PARTICULARLY IN THE SPACE SHUTTLE PROCESSING AREA
 - “YOUNG” THE AGENCY
- **RE-CREATE INTERNAL DESIGN ENGINEERING CAPABILITY**
- **LIVE WITH A SLOWLY RISING TO STATIC BUDGET FOR THIS DECADE**
 - REDUCE SHUTTLE FLIGHT RATE (UNFORTUNATELY, THIS HAS BEEN DONE AS A CONSEQUENCE OF COLUMBIA LOSS)
 - RETIRE SHUTTLE AS SOON AS POSSIBLE
 - CLOSE ONE OR MORE CENTERS?

INTERNATIONAL SPACE STATION (ISS) CHALLENGES FOR THE “NEW NASA” -2

- **REDUCE OR ELIMINATE RUSSIAN LEVERAGE**
 - **DEVELOP KITS FOR LONG DURATION SHUTTLE STAYS AT ISS?**
 - **WOULD REPLACE CANCELED CRV, HABMOD AND PROPMOD AND ALLOWS EXTENDED WORK BY SIX OR MORE PERSONS AND BIOMEDICAL RESEARCH**
 - **NOT IN PRESIDENT’S PLAN**
 - **RE-NEGOTIATE IGA ONCE SHUTTLE AND/OR CEV FLYING?**
 - **SET UP U.S. “PROFESSIONAL” OR “TOURIST” IN SPACE INITIATIVE?**
- **STIMULATE COMMERCIAL ACTIVITIES IN SPACE**
 - **R&T PROGRAMS IN COOPERATION WITH INDUSTRY?**
 - **PRICE SHUTTLE LAUNCH COSTS AT THE MARGINAL COST?**
 - **PRICE SHUTTLE LAUNCH COSTS AT ZERO FOR FIRST TWO TRIPS BY NEW USER?**

INTERNATIONAL ENVIRONMENTAL AGREEMENTS -1

- **IMPORTANT FOR SPACE LAW**
 - **ATMOSPHERE OF ANTI-U.S INTERNATIONALISM FROM LEFT OF CENTER**
 - **PRECEDENTS FOR ENVIRONMENT-BASED ATTACKS ON USE OF SPACE RESOURCES**
 - **EUROPEAN ASTRONOMERS**
 - **GROUPS AGAINST NUCLEAR POWER SOURCES IN SPACE**
 - **CLEARLY, SOME PROBLEMS WITH RUSSIAN DEVICES**
- **UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (1992) (RIO ENVIRONMENTAL TREATY)**
 - **ACHIEVE STABILIZATION OF GREENHOUSE GAS CONCENTRATIONS IN THE ATMOSPHERE**
 - **RETURN TO 1990 EMISSION LEVELS**
 - **WITHIN A TIME FRAME SUFFICIENT TO ALLOW ECOSYSTEMS TO ADAPT NATURALLY TO CLIMATE CHANGE, TO ENSURE THAT FOOD PRODUCTION IS NOT THREATENED, AND TO ENABLE ECONOMIC DEVELOPMENT TO PROCEED IN A SUSTAINABLE MANNER.**
 - **U.S. A SIGNATORY (BUSH-1 ADMINISTRATION)**

INTERNATIONAL ENVIRONMENTAL AGREEMENTS -2

- **KYOTO PROTOCOL OF 1997 A FOLLOW-UP TO THE RIO TREATY**
 - **PRESIDENT BUSH WILL NOT SUPPORT / NO ACTUAL SUPPORT IN THE SENATE (99-0 AGAINST)**
 - **CHINA, INDIA, EUROPE AND RUSSIA GIVEN SPECIAL TREATMENT AT U.S. EXPENSE BUT RUSSIA NOW OUT**
 - **ENERGY GROWTH IS FOUNDATION OF THE CONTINUED GROWTH IN THE U.S. ECONOMY AND ITS SUPPORT OF OUR POLITICAL ROLE IN THE WORLD**
 - **ENVIRONMENTAL RESTRICTIONS ON U.S. USE OF COAL WILL REDUCE PRICE COMPETITIVENESS OF U.S. TRADE**
 - **MIDTERM ENVIRONMENTAL OPTION FOR U.S. IS RAPID GROWTH OF NUCLEAR POWER**
 - **NOT BEEN SCARED ENOUGH YET TO GO THIS WAY, YET**
 - **LONG-TERM OPTION IS ENERGY FROM SPACE**
 - **THAT'S WHAT THIS COURSE IS EXPLORING**

U.S. REGULATORY LAW IN SPACE -1

- **COMMUNICATIONS LAW OF 1934, ETC.**
 - **FREQUENCY ALLOCATION AND LIMITS ON USE**
- **ENVIRONMENTAL PROTECTION ACT AS AMENDED**
- **COMMERCIAL SPACE ACT OF 1998**
 - **ASSETS ARE PRIVATE PROPERTY**
 - **LAUNCH LICENSES**
 - **RETURN PAYLOAD LICENSES**
- **COMMERCIAL SPACE ACT OF 2003 - PENDING**
 - **LICENSING AND INDEMNIFICATION OF PRIVATE LAUNCHES**
 - **FRAMEWORK FOR TOURISM**
- **MUCH OTHER RELEVANT REGULATORY AUTHORITY**

U.S. REGULATORY LAW IN SPACE -2

- **PROPERTY (LAND) RIGHTS LEGISLATION WITHIN CONTEXT OF OUTER SPACE TREATY?**
 - **COULD U.S. ESTABLISH ITS OWN REGIME OF PROPERTY RIGHTS AS PART OF ITS AUTHORIZED OVERSIGHT OF ITS NATIONAL ENTITIES WITHOUT DECLARING NATIONAL SOVEREIGNTY OVER THE “LAND” IN QUESTION?**
 - **CREATE A PROPERTY RIGHTS FRAMEWORK TO GOVERN U.S. ENTITIES AND STATE THESE ARE THE PARAMETERS FOR OTHERS THAT U.S. ENTITIES MUST RECOGNIZE**
 - **PROPERTY RIGHTS WOULD SIGNIFICANTLY INCREASE INCENTIVES FOR PRIVATE INVESTMENT.**
 - **PRECEDENTS**
 - **COMMERCIAL SPACE ACT OF 1998**
 - **U.S. SPACE ASSETS AND RETURNED PAYLOADS CAN BE PRIVATE PROPERTY**
 - **POSITION HAS NOT BEEN QUESTIONED BY THE INTERNATIONAL COMMUNITY**

IS THE SPACE TREATY OF 1967 ENOUGH TO ASSURE PROPER BEHAVIOR DURING RESOURCE ACQUISITION?

- **LICENSING STATE CAN WITHDRAW LAUNCH, COMMUNICATIONS AND RETURN PAYLOAD LICENCES FOR CAUSE**
 - **ENFORCE COMPLIANCE BEFORE RE-ACTIVATION**
- **WORLD COMMUNITY CAN BRING MATTER TO THE WORLD COURT AND/OR ENFORCE SANCTIONS**
- **EITHER ACTION WOULD HAVE SERIOUS IMPACT ON OFFENDING ENTITY'S ABILITY TO MAINTAIN ITS SPACE OPERATIONS**
 - **SAFETY OF PERSONNEL**
 - **ACCESS TO CAPITAL**
 - **ACCESS TO MARKETS**

