

**October 19, 1979**

**Department of State Telegram 273943 to US  
Embassy Bonn et al., 'Post International Nuclear  
Fuel Cycle Evaluation (INFCE) Exploration'**

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**Summary:**

Explorations of common approaches to nonproliferation and energy development issues arising out of the nuclear fuel cycle.

**Original Language:**

English

**Contents:**

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E.O. 12065: GDS 10/18/85 (SMITH, GERARD)

TAGS: MNUC, PARM TECH, ENRG

SUBJECT: POST INTERNATIONAL NUCLEAR FUEL CYCLE EVALUATION  
(INFCE) EXPLORATION

1. SECRET (ENTIRE TEXT)
2. SEPTEL SETS OUT MAJOR OBJECTIVES OF POST-INFCE EXPLORATIONS AND PROPOSED SCHEDULE FOR INITIAL ROUNDS OF EXPLORATIONS. THIS TELEGRAM CONTAINS PAPER TO BE DELIVERED TO APPROPRIATE LEVELS OF ACTION ADDRESSEE HOST GOVERNMENTS.
3. IN DELIVERING PAPER, REQUEST EMBASSIES MAKE FOLLOWING POINTS:
  - PAPER IS TO SUGGEST A BASIS FOR POST INFCE ARRANGEMENTS.
  - IT DOES NOT IMPLY A NEW SET OF US PROPOSALS, BUT SETS OUT POSSIBLE APPROACHES FOR EXPLORATION OF KEY ISSUES.
  - FOR BONN, LONDON, PARIS: GIVEN TIME LIMITS AND COMPLEXITY OF SUBJECT MATTER, US SUGGESTS CONCENTRATION ON ITEMS 1,2,3,4,5 AND 10 UNDER SECTION IV.

4. BEGIN TEXT

POST-INFCE

THIS PAPER IS PUT FORWARD AS A BASIS FOR EXPLORATIONS OF COMMON APPROACHES TO NONPROLIFERATION AND ENERGY DEVELOPMENT ISSUES ARISING OUT OF THE NUCLEAR FUEL CYCLE. THE ISSUES INVOLVED HAVE BEEN UNDER INTENSIVE INTERNATIONAL DISCUSSION FOR THE PAST SEVERAL YEARS BOTH IN INFCE AND IN OTHER BILATERAL AND MULTILATERAL CONTEXTS. THE APPROACHING END OF INFCE, AS WELL AS SEVERAL OTHER DECISION POINTS IN THE NEAR FUTURE, MAKE THESE EXPLORATIONS TIMELY, IF NOT URGENT.

THIS PAPER -- AND THE NEXT ROUND OF CONSULTATIONS -- PROPOSE TO BUILD ON OUR EARLIER ILLUSTRATIVE ELEMENTS PAPER AND THE BILATERAL DISCUSSIONS CONCERNING IT, AS WELL AS THE LIKELY CONCLUSIONS OF INFCE. THE MAIN PURPOSE IS TO DEVELOP APPROACHES THAT WILL HARMONIZE ENERGY DEVELOPMENT AND NONPROLIFERATION OBJECTIVES. IT IS RECOGNIZED THAT ABUSE OF THE COMMERCIAL FUEL CYCLE IS NOT THE ONLY PROLIFERATION RISK.

WE BELIEVE THAT THE DISCUSSIONS OF THE PAST FEW YEARS HAVE LAID THE BASIS FOR DEVELOPING CONSENSUS ON A NUMBER OF MAJOR ASPECTS OF FUEL CYCLE POLICY. SOME OF THE ELEMENTS OF THIS POSSIBLE CONSENSUS COULD BE:

- 1. CONSISTENT WITH NONPROLIFERATION CONSIDERATIONS, ALL COUNTRIES SHOULD HAVE ACCESS TO NUCLEAR MATERIALS AND FACILITIES NECESSARY TO MEET THEIR LEGITIMATE NUCLEAR ENERGY NEEDS AS THEY EVOLVE.
- 2. THE SPREAD OF ENRICHMENT AND REPROCESSING FACILITIES, AS WELL AS PLUTONIUM AND HIGH ENRICHED URANIUM, CAN INCREASE THE RISK OF PROLIFERATION AND, THEREFORE, SHOULD BE LIMITED; ADDITIONAL SUCH SENSITIVE FACILITIES OR USE OF SUCH SENSITIVE MATERIAL SHOULD BE PURSUED ONLY WHERE ECONOMICALLY JUSTIFIED AND WHERE INSTITUTIONS CAN BE ESTABLISHED TO CONTAIN OR REDUCE THE RISKS.
- 3. FIRMLY PLANNED ENRICHMENT CAPACITY IS SUFFICIENT TO MEET PROJECTED NEEDS THROUGH THE MID 1990S.
- 4. COMMERCIALIZATION OF PLUTONIUM RECYCLE IN LIGHT WATER REACTORS IS ECONOMICALLY MARGINAL AT THE PRESENT TIME.
- 5. A NUMBER OF COUNTRIES (OR GROUPS OF COUNTRIES), PRINCIPALLY THE ADVANCED INDUSTRIAL COUNTRIES, ARE PROCEEDING WITH RESEARCH, DEVELOPMENT OR DEMONSTRATION TO DEVELOP A BREEDER REACTOR OPTION. THE POTENTIAL OF BREEDERS FOR COUNTRIES OR GROUPS OF COUNTRIES WITH MAJOR PROGRAMS IS RECOGNIZED. ONLY ONE COUNTRY HAS AT PRESENT OPTED FOR EARLY COMMERCIALIZATION OF BREEDERS. ALL OTHER COUNTRIES HAVE NOT YET SO OPTED, AND THUS PLUTONIUM SEPARATION PROGRAMS SHOULD NOT NOW BE LAUNCHED ON THE ASSUMPTION THAT BREEDERS ARE THE REACTORS OF CHOICE FOR FUTURE POWER PRODUCTION.
- 6. A MAJOR RELATED AIM IS TO MINIMIZE THE PROLIFERATION RISKS ASSOCIATED WITH THE AVAILABILITY OF PLUTONIUM. AN INTERNATIONAL PLUTONIUM REGIME, PARTICULARLY IF IT

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INCLUDES MEASURES CONCERNING USE OF PLUTONIUM, COULD HAVE IMPORTANT ADVANTAGES IN THIS CONNECTION. THERE ARE ALSO CONCERNS THAT SUCH A REGIME COULD BE USED TO JUSTIFY PREMATURE SEPARATION OF PLUTONIUM.

- 7. THERE ARE CLEAR PROLIFERATION RISKS REGARDING PRODUCTION AND USE OF HIGHLY ENRICHED URANIUM. A CHANGE TO LOWER ENRICHMENT LEVELS WOULD SEEM FEASIBLE FOR THE GREAT MAJORITY OF RESEARCH REACTORS, AND NO NEED FOR ADDITIONAL HIGH ENRICHMENT CAPACITY IS, THEREFORE, SEEN.
- 8. THE PROLIFERATION RISKS MENTIONED ABOVE REQUIRE AN IMPROVED SAFEGUARDS REGIME FOR SENSITIVE FACILITIES AND MATERIAL STRESSING DESIGN FOR SAFEGUARDS, IMPROVED ACCOUNTING, AND ENHANCED SURVEILLANCE AND CONTAINMENT. INTERNATIONAL SAFEGUARDS ON ALL FACILITIES IS AN IMPORTANT GOAL, AND IS ESPECIALLY IMPORTANT IN COUNTRIES WHERE SENSITIVE TECHNOLOGY MAY BE PRESENT.
- 9. IN ORDER TO PROVIDE GREATER SUPPLY AND NONPROLIFERATION ASSURANCE, THERE SHOULD BE A MIX OF INSTITUTIONAL AND INCENTIVE ARRANGEMENTS TO MEET THE NEEDS, PROBLEMS AND UNCERTAINTIES OF COUNTRIES CONDUCTING CIVIL NUCLEAR ENERGY PROGRAMS.

IN ADDITION, THERE IS A SUBSTANTIAL AMOUNT OF AGREEMENT AMONG SUPPLIERS THAT INTERNATIONAL TRANSFER OF SENSITIVE TECHNOLOGIES SHOULD BE LIMITED AND CAREFULLY CONTROLLED, AND THAT SEPARATION OF PLUTONIUM SHOULD BE RELATED TO SPECIFIC NEEDS FOR ITS USE. IT FOLLOWS FROM PARAGRAPHS 4 AND 5 ABOVE THAT PROJECTED SEPARATION CAPACITY APPEARS TO BE ADEQUATE TO MEET PLUTONIUM NEEDS.

III

THE DISCUSSIONS OVER THE LAST SEVERAL YEARS IN INFCE AND ELSEWHERE HAVE ALSO CREATED A SUBSTANTIAL DEGREE OF AGREEMENT ON KEY AREAS IN WHICH FURTHER INTERNATIONAL ACTION SHOULD BE CONSIDERED -- TO PROVIDE BOTH GREATER ASSURANCE OF THE AVAILABILITY OF NUCLEAR ENERGY FOR PEACEFUL PURPOSES AND ADDITIONAL PROTECTION AGAINST MISUSE OF THE FUEL CYCLE. THE MAIN AREAS, IN OUR VIEW, INVOLVE:

- 1. SUPPLY ASSURANCE FOR NUCLEAR FUEL AND NON-SENSITIVE TECHNOLOGY.
- 2. GREATER STABILITY AND PREDICTABILITY IN THE EXERCISE OF NATIONAL CONTROLS OVER SUPPLIED TECHNOLOGY AND MATERIAL, PRINCIPALLY SPENT FUEL AND PLUTONIUM USE.
- 3. AN EFFECTIVE INTERNATIONAL REGIME FOR SENSITIVE MATERIALS, IN PARTICULAR PLUTONIUM.
- 4. INTERNATIONAL/MULTINATIONAL AUSPICES OR ADDITIVE CONTROLS FOR SENSITIVE FACILITIES -- BOTH TO PROVIDE ADDED ASSURANCE OF PEACEFUL PURPOSE AND TO OFFER AN ALTERNATIVE TO SMALL SCALE NATIONAL FACILITIES.
- 5. FURTHER REFINEMENT OF THE ANALYTIC BASIS FOR FUEL CYCLE DECISIONS, IN PARTICULAR TO IMPROVE THE BASIS FOR JUDGMENTS RELATED TO ACQUISITION OF SENSITIVE FACILITIES AND MATERIALS.
- 6. COOPERATION IN FOSTERING PART-CIPATION IN AND ENSURING COMPLIANCE WITH GENERALLY ACCEPTED NONPROLIFERATION UNDERTAKINGS.
- 7. IMPROVEMENT OF SAFEGUARDS (ESPECIALLY FOR SENSITIVE

MATERIALS AND FACILITIES), AND EXTENSION OF SAFEGUARDS COVERAGE.

- 8. INTERNATIONAL COOPERATION IN ASSESSING ENERGY NEEDS AND DEALING WITH THE PROBLEMS OF NUCLEAR POWER (E.G., REACTOR SAFETY, SPENT FUEL DISPOSITION AND WASTE DISPOSAL).
- 9. DEVELOPMENT OF INTERNATIONAL SPENT FUEL REPOSITORIES.

ACTIONS IN THESE AREAS ARE CLEARLY INTERCONNECTED AND MUST BE CAREFULLY CHOSEN TO REDUCE THE POSSIBILITY OF CONFLICT AMONG THEM. THE DEVELOPMENT OF AN ACCEPTABLE FRAMEWORK OR REGIME WILL INEVITABLY REFLECT TRADEOFFS AMONG SOME OF THESE OBJECTIVES. FOR EXAMPLE, THE ABILITY TO REDUCE THE UNCERTAINTY OF NATIONAL CONTROLS AND THE FRICTIONS ARISING IN THEIR ADMINISTRATION WILL DEPEND HEAVILY ON HOW FAR AN INTERNATIONAL REGIME CAN SERVE TO ACHIEVE THE BASIC PURPOSES OF SUCH CONTROLS.

THE COMPONENTS OF SUCH A FRAMEWORK WILL PROBABLY HAVE TO EVOLVE RATHER THAN BE ESTABLISHED SIMULTANEOUSLY. THERE IS GROWING AGREEMENT ON GENERAL PRINCIPLES AND PRIORITIES. EXISTING ARRANGEMENTS AND INSTITUTIONS FOR THE DISCUSSION OF OUTSTANDING ISSUES AND FOR MONITORING PROGRESS SHOULD BE MAINTAINED; THERE MAY ALSO BE A NEED TO EXPAND OR TO ADD TO SUCH ARRANGEMENTS OR INSTITUTIONS.

WE THINK IT WOULD BE USEFUL FOR KEY COUNTRIES NOW TO BEGIN TO UNDERSTAND BETTER WHERE WE MIGHT HEAD AND CONSIDER STRATEGIES FOR MOVING IN THESE DIRECTIONS. WE ARE AWARE THAT A NUMBER OF COUNTRIES HAVE ALREADY BEGUN TO CONSIDER THESE POSSIBILITIES.

SOME QUESTIONS FOLLOW WHICH MAY HELP IN EXPLORING POSSIBLE POST-INFCE FRAMEWORKS. THE UNITED STATES HAS GIVEN CONSIDERABLE THOUGHT TO THESE QUESTIONS, AND ON SOME OF THEM HAS VIEWS AND SUGGESTIONS. ON MANY, HOWEVER, WE DO NOT HAVE A FIXED VIEW. WE HOPE THAT OVER THE NEXT SEVERAL MONTHS WE CAN EXTEND THE EXISTING CONSENSUS AND FIND COMMON APPROACHES TO OUTSTANDING QUESTIONS.

IV

- 1. NON-SENSITIVE SUPPLY ASSURANCE

A) WHAT MEASURES AND/OR INSTITUTIONS (E.G., STREAMLINING OF NATIONAL PROCEDURES, ADDITIONAL LEGAL COMMITMENTS, NEW MECHANISMS FOR CHANGE) WOULD BE MOST

HELPFUL IN PROVIDING GREATER LONG-TERM ASSURANCE OF SUPPLY OF URANIUM, ENRICHMENT SERVICES, HEAVY WATER AND REACTORS (LWR AND NATURAL URANIUM) AND THEIR COMPONENTS? ARE SUCH MEASURES IMPORTANT? SHOULD THERE ALSO BE ASSURANCES OF DEMAND?

B) ARE ADDED MEASURES AND/OR INSTITUTIONS (E.G., NATIONAL STOCKPILES, POOLING OF STOCKPILES, OR AN INTERNATIONAL FUEL BANK) NEEDED TO DEAL WITH EMERGENCY (ECONOMIC OR POLITICAL) SUPPLY DISRUPTIONS?

C) SHOULD NON-SENSITIVE SUPPLY ASSURANCES DEPEND ON FOREGOING SENSITIVE FACILITIES AND MATERIALS OR PLACING THEM UNDER INTERNATIONAL/MULTINATIONAL AUSPICES?

D) ARE SPECIAL MEASURES NEEDED FOR DEVELOPING COUNTRIES?

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- 2. NATIONAL CONTROLS ON SENSITIVE TECHNOLOGIES AND MATERIAL

- A) CAN THE EXERCISE OF NATIONAL CONTROLS BE MADE MORE COMPREHENSIVE, STABLE AND PREDICTABLE?
- B) ON WHAT BASIS? (N.B. REGULARIZING THE EXERCISE OF NATIONAL CONTROLS WILL BE GREATLY FACILITATED BY EFFECTIVE IMPLEMENTATION OF SOME OF THE OTHER ITEMS SUGGESTED IN THIS PAPER.)

- 3. MANAGING SENSITIVE MATERIALS

- A) WHAT KIND OF INTERNATIONAL REGIME FOR MANAGING WEAPONS GRADE MATERIAL WOULD REDUCE PROLIFERATION RISKS? HOW? SHOULD IT COVER PLUTONIUM UNTIL RE-IRRADIATED INCLUDING UNIRRADIATED PLUTONIUM USED IN RESEARCH?
- B) SHOULD ALL CIVIL (INCLUDING EXISTING EXCESS) PLUTONIUM BE SUBJECT TO THE INTERNATIONAL REGIME?
- C) WHAT KINDS OF RELEASE CRITERIA AND CONDITIONS WILL BEST ASSURE PROTECTION AGAINST PROLIFERATION RISKS? HOW WOULD THEY BE APPLIED?
- D) HOW CAN THE INTERNATIONAL PLUTONIUM STORAGE (IPS) DISCUSSIONS NOW BEING HELD UNDER IAEA AUSPICES BEST CONTRIBUTE TO DEVELOPING SUCH A REGIME?
- E) HOW CAN WE ENSURE THAT SUCH A REGIME IS NOT USED TO JUSTIFY PREMATURE AND UNNECESSARY ACQUISITION OF NATIONAL SENSITIVE FACILITIES?

- 4. INTERNATIONAL/MULTINATIONAL AUSPICES FOR SENSITIVE FACILITIES

- A) HOW CAN SUCH FACILITIES SERVE AS PRACTICAL ALTERNATIVES TO NEW NATIONAL FACILITIES FOR (I) RESEARCH, DEVELOPMENT AND DEMONSTRATION OR (II) COMMERCIAL USE?
- B) WHAT KIND OF INTERNATIONAL/MULTINATIONAL PARTICIPATION IS FEASIBLE AND USEFUL? COULD ONE CONSIDER, FOR EXAMPLE, PARTICIPATION IN SENSITIVE RESEARCH; PARTICIPATION IN PLANT MANAGEMENT AND FINANCING; COMMITMENTS TO INTERNATIONAL PLUTONIUM MANAGEMENT OR RESTRICTIONS ON ENRICHMENT LEVELS; CROSS INVESTMENT LINKED TO OUTPUT; PARTICIPATION IN PLANNING OF NEW CAPACITY; PERMITTING SOME TECHNOLOGY ACCESS TO PARTICIPANTS; GREATER IAEA INVOLVEMENT TO ENHANCE SAFEGUARDS?
- C) WHICH EXISTING OR FUTURE FACILITIES MIGHT BE BROUGHT UNDER MULTINATIONAL AUSPICES? SHOULD THESE IN FIRST INSTANCE BE IN OECD AREA? WHAT INCENTIVES FOR NON-OECD COUNTRIES TO JOIN?

- 5. TECHNICAL BASIS FOR ACQUISITION OF SENSITIVE FACILITIES

- A) IS THERE A USEFUL ANALYTIC BASIS FOR DETERMINING WHERE SENSITIVE FACILITIES ARE APPROPRIATE? WHAT WOULD BE ITS LIMITATIONS AND POTENTIAL DISADVANTAGES?
  - B) HOW SHOULD SUCH A BASIS BE DEVELOPED?
  - C) HOW BROADLY ACCEPTABLE CAN IT BE?
- 6. FOSTERING PARTICIPATION/INSURING COMPLIANCE
- A) HOW CAN COUNTRIES BE INDUCED TO PARTICIPATE IN

THE VARIOUS ARRANGEMENTS WHICH EVOLVE?

- B) HOW CAN COMPLIANCE BE ASSURED?
  - C) WHAT SANCTIONS -- IF ANY -- ARE FEASIBLE FOR NON-COMPLIANCE?
- 7. IMPROVING AND EXTENDING SAFEGUARDS
- A) IN WHAT WAYS CAN WE EXTEND AND IMPROVE SAFEGUARDS, (E.G. DESIGN FOR SAFEGUARDS, IMPROVED ACCOUNTING, ENHANCED SURVEILLANCE AND CONTAINMENT, AND IN THE CASE OF ENRICHMENT PLANTS DEDICATION TO LOW ENRICHMENT).
  - B) HOW SHOULD WE SUPPORT IAEA ACTIVITIES (IN PARTICULAR INCREASED R AND D) IN THIS AREA?
- 8. TECHNICAL COOPERATION AND ASSISTANCE
- A) SHOULD TECHNICAL COOPERATION BE EXPANDED ON REACTOR SAFETY, SPENT FUEL DISPOSITION AND WASTE DISPOSAL?
  - B) HOW CAN DEVELOPING COUNTRIES BE ASSISTED WITH OVERALL ENERGY ASSESSMENTS TO DETERMINE NEEDS FOR NUCLEAR POWER?
  - C) UNDER WHAT CONDITIONS AND WITH WHOM SHOULD TECHNICAL COOPERATION BE EXPANDED ON ADVANCED TECHNOLOGIES?
  - D) TO WHAT EXTENT SHOULD SUCH COOPERATION BE PURSUED WITHIN THE FRAMEWORK OF IAEA?
- 9. INTERNATIONAL SPENT FUEL REPOSITORIES
- A) HOW MIGHT INTERNATIONAL SPENT FUEL REPOSITORIES BE ESTABLISHED? WHERE? WHAT ARE THE DOMESTIC POLITICAL CONSTRAINTS AND HOW CAN THEY BE DEALT WITH?
- 10. FORA
- A) ARE EXISTING FORA ADEQUATE? IF NOT, WHAT ELSE IS NEEDED?
  - B) WHAT SHOULD BE THE RELATIONSHIP OF ANY NEW FORUM TO THE EKLUND INITIATIVE, NPT REVIEW CONFERENCE, YUGOSLAV PROPOSED UN CONFERENCE ON THE PEACEFUL USES OF NUCLEAR ENERGY AND NSG. END TEXT. VANCE

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