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E.O. 12065: RDS: 1, 3, 9/30/2000

TAGS: PARM, TECH, FR, IZ, IAEA

SUBJECT: SAFEGUARDS-RELEVANT TECHNICAL INFORMATION ON OSIRA REACTOR

1. (S) AS EMBASSY AND GDF KNOW, US HAS A MAJOR PROGRAM OF TECHNICAL ASSISTANCE TO IAEA SAFEGUARDS. ONE ELEMENT OF THIS PROGRAM RELATES TO SAFEGUARDS FOR RESEARCH REACTORS. IAEA HAS LITTLE EXPERIENCE IN SAFEGUARDS APPROACHES FOR

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SOME TYPES OF FACILITIES INCLUDING LARGE LIGHT WATER MODERATED HEU RESEARCH REACTORS, DURING INFORMAL CONTACTS WITH IAEA PERSONNEL, IT BECAME CLEAR THAT THEY WERE NOT SURE OF HOW TO DESIGN SAFEGUARDS APPROACH FOR OSIRAK REACTOR IN PART BECAUSE OF INSUFFICIENT OR CONFLICTING INFORMATION AVAILABLE FROM IRAQ. IN PARTICULAR, WE UNDERSTAND LARGE APPARENT AMBIGUITY IN POTENTIAL POWER AND FLUX LEVELS CREATES MAJOR UNCERTAINTY AS TO WHETHER PLUTONIUM PRODUCTION MIGHT BE SUBSTANTIAL.

2. (S) FYI: DEPARTMENT RECOGNIZES SENSITIVITY OF ENTIRE QUESTION OF FRANCE/IRAQ NUCLEAR COOPERATION, AND THAT IT IS IMPORTANT NOT TO COMPLICATE OR DELAY THE PROCESS OF OBTAINING ANSWERS TO THE SENSITIVE QUESTIONS WE HAVE PUT TO FRENCH ON EXTENT OF THEIR OBLIGATIONS TO IRAQ AND THEIR PLANS FOR HEU SHIPMENT. END FYI. WE KNOW FRENCH

WILL WANT TO FACILITATE MOST EFFECTIVE POSSIBLE APPLICATION OF IAEA SAFEGUARDS AT THE OSIRAK REACTOR, AND WE BELIEVE AN IMPORTANT STEP TO THAT END WOULD BE FOR FRANCE TO ASSURE THAT IAEA HAS ACCURATE AND COMPLETE TECHNICAL INFORMATION RELEVANT TO SAFEGUARDS. THE IAEA'S NEED FOR SUCH INFORMATION WILL CONTINUE, DESPITE THE CURRENT FIGHTING IN THE REGION.

3. (S) ONE POSSIBLE WAY TO PURSUE THIS POINT MIGHT BE FOR EMBASSY TO DISCUSS MATTER WITH LOUET, MAKING POINTS IN PARAS 1 AND 2 ABOVE, AND SEEK HIS VIEWS ON HOW TO ENSURE THAT INFORMATION SUCH AS THAT LISTED IN PARA 4 BELOW IS PROVIDED TO IAEA. FOR EXAMPLE, FRANCE MIGHT PROVIDE INFORMATION DIRECTLY TO IAEA, NOTIFYING IRAQ. YOU MAY PROVIDE LIST OF QUESTIONS IN PARA 4 TO LOUET OR OTHERS AT YOUR DISCRETION. IN DISCUSSING THIS QUESTION WITH GOF

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YOU MAY WISH TO EMPHASIZE THAT THE INFORMATION REQUESTED IS TECHNICAL DATA OF A TYPE WHICH IS NORMALLY AVAILABLE ON MOST REACTORS FROM OPEN, PUBLISHED SOURCES, BUT HAS NOT BEEN RELEASED TO THE BEST OF OUR KNOWLEDGE ON THE OSIRAK. SOME INFORMATION IS AVAILABLE PUBLICLY ON THE OSIRAK REACTOR IN FRANCE, BUT AGENCY IS UNDOUBTEDLY NOT CLEAR ON DIFFERENCES (IF ANY) WHICH MIGHT EXIST BETWEEN THE TWO REACTORS.

4. (C) FOLLOWING ARE THE QUESTIONS WHICH OCCUR TO US IN CONSIDERING TASK OF IAEA IN SAFEGUARDING OSIRAK EFFECTIVELY

(A) WHAT CAPACITY DOES THE OSIRAK HAVE FOR INSERTING NATURAL OR DEPLETED URANIUM FUEL (1) IN THE CORE REGION; (2) IN THE PNEUMATIC/HYDRAULIC TRANSFER TUBES; AND (3) AROUND THE CORE? WHAT IS THE ACCESS TO MATERIAL IN EACH OF THESE REGIONS?

(B) WHAT IS THE MAXIMUM POTENTIAL POWER LEVEL OF THE OSIRAK BASED ON CORE SIZE AND HEAT TRANSFER? (HOW MANY ASSEMBLIES, REFLECTOR CONFIGURATIONS, ETC.?) WHAT IS THE NORMAL FUEL ELEMENT LOADING AT RATED POWER?

(C) IS THE OSIRAK IDENTICAL TO THE OSIRIS IN ITS REACTOR INTERNALS (E.G. 56 GRID POSITION, 10 HYDRAULIC RESEARCH TUBES, 1 PNEUMATIC TUBE)?

(D) WHAT IS THE MAXIMUM HEAT REMOVAL CAPACITY (PRIMARY AND SECONDARY) AND WHAT IS THE POTENTIAL FOR UPGRADING THE INSTALLED SYSTEM?

(E) WHAT IS THE APPROXIMATE GEOMETRY AND REACTIVITY WORTH OF THE BERYLLIUM REFLECTOR? HOW MUCH OPERATION FLEXIBILITY (POWER LEVEL, REFUELING INTERVAL) REMAINS FOR OPERATION WITHOUT A REFLECTOR? CAN THE BERYLLIUM ELEMENTS BE REMOVED WITH THE CRANE, OR ARE THEY WELDED INTO PLACE?

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(F) WHAT IS THE FUEL MANAGEMENT PROGRAM (SPENT FUEL DISCHARGE VS. TIME, SHUFFLING PATTERN, ETC.) FOR HIGH POWER OPERATION? WHAT IS THE EXPECTED CAPACITY FACTOR, OPERATIONAL POWER LEVEL, AND DOWN-TIME FOR REFUELING AND MAINTENANCE? WHAT IS THE MAXIMUM CREDIBLE SUSTAINED DUTY CYCLE?

(G) WHAT ARE THE FAST AND THERMAL FLUX DISTRIBUTIONS, IN-CORE AND EX-CORE? HOW ARE THESE AFFECTED BY THE PRESENCE OF A REFLECTOR?

(H) WHAT ARE THE EXPECTED RANGES (BURNUP AND RESIDUAL ENRICHMENT) OF DISCHARGED FUEL?

(I) IS THERE READY ACCESS TO THE REACTOR POOL? IN PARTICULAR, COULD THE IAEA EASILY INSTALL SURVEILLANCE CAMERAS? HOW MANY WOULD BE REQUIRED TO MAINTAIN CONTINUOUS SURVEILLANCE OF THE REACTOR HEAD, REFLECTOR AND SPENT FUEL POOL? HOW MANY SPENT FUEL ELEMENTS CAN BE STORED? IS THERE PROVISION FOR PLACING SPENT FUEL IN A SEALED STORE?

(J) CAN THE TOP OF THE REACTOR BE SEALED BETWEEN FUEL RELOADS? IF NOT, WOULD IT BE DIFFICULT TO MODIFY THE STRUCTURE TO PERMIT THE EASY USE OF IAEA SEALS WHICH WOULD ASSURE THAT NOTHING EXTRA HAD BEEN LOADED INTO THE REACTOR BETWEEN FUEL CHANGES.

(K) IS THERE A CENTRAL LOAD-OUT STATION OR CELL THROUGH WHICH ALL IRRADIATED SAMPLES FROM THE PNEUMATIC AND HYDRAULIC TUBES MUST PASS? IF SO, IS THERE SUFFICIENT ROOM TO INSTALL A SURVEILLANCE CAMERA AND/OR GAMMA MONITORING UNIT? IF NOT, CAN UNUSED TUBES BE SEALED BY IAEA?

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(L) IS THERE A TRANSFER CHANNEL BETWEEN THE OSIRAK AND THE ITALIAN-SUPPLIED LABORATORIES? ARE THERE ANY SHIELDED TRANSFER CASKS AT THE SITE? CHRISTOPHER

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