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TO PRIORITY DEPT OF ENERGY

TELNO ELFU 12

OF 291555Z AUGUST 86

AND TO PRIORITY FCO

INFO ROUTINE MOSCOW, WASHINGTON, UKREP BRUSSELS

FOR AE DIVISION

CHERNOBYL: POST ACCIDENT REVIEW MEETING, 25-29 AUGUST 1986

FOLLOWING FROM MORPHET

SUMMARY

1. A HIGH LEVEL TECHNICAL COMMITTEE WITH SERIOUS AND WELL PREPARED PRESENTATIONS BY THE SOVIET EXPERTS ON THE CAUSE AND COURSE OF THE CHERNOBYL DISASTER, EMERGENCY MEASURES AND RADIOLOGICAL CONSEQUENCES. OVER 400 INTERNATIONAL EXPERTS ATTENDED. AN IMPORTANT MEASURE OF AGREEMENT WAS REACHED ON THE MAIN INITIATING EVENTS AND ON THE NEED FOR FURTHER EXPERT EXCHANGE IN A VARIETY OF AREAS.

DETAIL

2. THE USSR FIELDED A TEAM OF TOP EXPERTS LED BY ACADEMICIAN LEGASOV, DEPUTY DIRECTOR OF THE KURCHATOV INSTITUTE. PRIOR TO THE MEETING THEY HAD TABLED A DETAILED ACCOUNT OF THE ACCIDENT WHICH IN EFFECT ACKNOWLEDGED THAT OPERATOR ERROR WAS COMPOUNDED BY WEAKNESSES IN THE DESIGN WHICH HAD ALLOWED OPERATORS TO OVERRIDE SAFETY INSTRUCTIONS IN A SERIES OF UNAUTHORISED ACTIONS. THE DOCUMENT CONCLUDED THAT QUOTE THE ACCIDENT ASSUMED CATASTROPHIC PROPORTIONS BECAUSE THE REACTOR WAS TAKEN BY THE STAFF INTO A NON-REGULATION STATE IN WHICH THE POSITIVE VOID COEFFICIENT OF REACTIVITY WAS ABLE SUBSTANTIALLY TO ENHANCE THE POWER EXCURSION UNQUOTE. THIS WAS AN IMPORTANT ADMISSION. WE HAD EARLIER FEARED THAT THE EMPHASIS WOULD BE PLACED ENTIRELY ON OPERATOR ERROR, WITH THE IMPLICATION THAT ALL REACTOR DESIGNS (INCLUDING THOSE IN WESTERN COUNTRIES) WERE EQUALLY VULNERABLE TO OPERATOR ERROR. AS IT IS, THE RUSSIANS ITEMISED DESIGN WEAKNESSES WHICH WERE IDENTIFIED BY UK EXPERTS IN 1977. LEGASOV EXPLAINED THAT WHEN RBMK REACTORS WERE FIRST PLANNED MORE THAN 20 YEARS AGO THEY REALISED THAT THE CONCEPT HAD SEVERAL SHORTCOMINGS, BUT IT HAD THE MERIT OF BEING BUILDABLE BY RUSSIAN INDUSTRY AT THAT TIME. THE DECISION WAS TAKEN TO GO AHEAD AND USE ENGINEERING TO OVERCOME THESE SHORTCOMINGS. HE ACCEPTED THAT THE DESIGNERS MADE A FUNDAMENTAL MISTAKE IN RELYING UPON WRITTEN INSTRUCTIONS TO THE OPERATORS, NOT TECHNICAL MEANS, TO RETAIN A SUFFICIENT SAFETY MARGIN. THE RUSSIANS NOW REALISED THAT THIS PLACED TOO MUCH RESPONSIBILITY ON THE OPERATORS.

3. THERE WAS GENERAL AGREEMENT AT THE MEETING THAT, AT THE BEGINNING OF THE ACCIDENT, THE REACTOR UNDERWENT WHAT IS KNOWN AS QUOTE PROMPT CRITICAL EXCURSION UNQUOTE. IN THIS THE NUCLEAR CHAIN REACTION SPEEDS UP. THE EXCURSION CAUSED AN EXPLOSION IN THE FUEL AND TRIGGERED AN ENORMOUS STEAM EXPLOSION WHICH BLEW THE TOP OFF THE REACTOR. THE ACCIDENT HAPPENED IN THE COURSE OF A TEST TO MEASURE

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THE ABILITY OF THE TURBINE TO POWER CERTAIN OF THE COOLING PUMPS WHILE IT WAS QUOTE FREE-WHEELING UNQUOTE TO A STANDSTILL. A RUNAWAY SITUATION DEVELOPED FROM WHICH THE OPERATORS TRIED TO EXTRICATE THEMSELVES BY DROPPING THE CONTROL RODS INTO THE CORE. THEY WERE TOO LATE.

4. THE RUSSIANS ANNOUNCED THAT THEY HAVE NOW CLOSED DOWN SOME OF THEIR RBMK REACTORS TO MAKE TECHNICAL CHANGES WHICH PREVENT CONTROL RODS FROM BEING COMPLETELY WITHDRAWN. THEY ALSO ANNOUNCED PLANS TO BUILD RAPID ACTING AND INDEPENDENT REACTOR SHUT-DOWN MECHANISMS. THESE CHANGES TO THE DESIGN SHOULD, IN THE VIEW OF OUR EXPERTS, PROVE SUFFICIENT TO AVOID RECURRENCE OF ACCIDENTS OF THE QUOTE PROMPT CRITICAL EXCURSION UNQUOTE TYPE. THE REVIEW MEETING DID, OF COURSE, CONCENTRATE HEAVILY ON THE SPECIFIC CAUSES OF THE CHERNOBYL ACCIDENT, AND DID NOT DISCUSS THE POSSIBILITY OF OTHER TYPES OF ACCIDENT. THE RUSSIANS EXPRESSED WILLINGNESS TO JOIN IN FURTHER DISCUSSIONS ON HOW DESIGN CAN AVOID OPERATOR ERROR. AS A FIRST STEP, THE IAEA ARE LIKELY TO ORGANISE A CONFERENCE ON THE MAN-MACHINE INTER-FACE. THEIR READINESS TO ACCEPT THE NEED FOR FURTHER WORK IN A NUMBER OF TECHNICAL AREAS WAS IN FACT ONE OF THE MOST ENCOURAGING FEATURES OF THE MEETING. APART FROM THE MAN-MACHINE INTER-FACE, ABOUT A DOZEN FURTHER WORKSHOPS/STUDY PROGRAMMES ARE LIKELY TO BE HELD ON THE TECHNOLOGY OF DECONTAMINATION, EPIDEMIOLOGICAL AND DOSIMETRIC STUDIES, FIRE FIGHTING, ETC. THE AGENCY WILL BE PREPARING A REPORT ON THE MEETING IN THE COURSE OF NEXT WEEK FOR PRESENTATION TO THE BOARD OF GOVERNORS ON 22/23 SEPTEMBER 1986.

5. THERE WAS SOME DISCUSSION ON ESTIMATES OF CANCER DEATHS IN THE USSR. SOVIET EXPERTS EXPLAINED THAT THEY HAD DELIBERATELY TAKEN AN ESTIMATE OF THE UPPER END OF THE RANGE AND THAT FURTHER WORK COULD REDUCE THESE ESTIMATES, PERHAPS BY A FACTOR OF 10. THE CHAIRMAN OF THE RELEVANT WORKING GROUP SEEMED DISPOSED TO ACCEPT THIS IN THE LIGHT OF EXPERT COMMENT.

6. THERE WAS A VERY BRIEF DISCUSSION ON DERIVED EMERGENCY REFERENCE LEVELS IN FOOD STUFFS. IT WAS AGREED THAT FURTHER WORK WAS NEEDED TO ACHIEVE A RATIONAL APPROACH TO DERLS AND THAT THIS MIGHT BE DEVELOPED IN ASSOCIATION WITH CURRENT WORK IN THE EC.

CONCLUSION

7. THE MEETING, AT WHICH THE UK FIELDED A STRONG TEAM INCLUDING THE CHAIRMAN OF THE CEGE AND THE CHIEF NUCLEAR INSPECTOR, ACHIEVED THE OBJECTIVE OF CONFIRMING THE NATURE OF THE RUSSIAN REACTOR ACCIDENT. IT HAS ALSO CREATED A FRAMEWORK OF CONSTRUCTIVE TECHNICAL DISCUSSION WITHIN WHICH FURTHER JOINT WORK UNDER IAEA AUSPICES WILL BE HELD. IT SEEMS LIKELY THAT THE RUSSIANS WILL THEMSELVES HAVE LEARNT MUCH FROM THIS MEETING, NOT LEAST IN RELATION TO SAFETY CULTURE IN WESTERN

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NUCLEAR INDUSTRIES. FURTHER EXCHANGES WILL PROVIDE AN OPPORTUNITY TO ASSIST THEM TO BUILD ON THE KNOWLEDGE THAT THEY HAVE GAINED DURING THIS MEETING.

B. FCO PLEASE PASS COPY TO DEPT OF ENVIRONMENT, MINISTRY OF AGRICULTURE, DEPT OF HEALTH, AND SCOTTISH OFFICE.

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