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JUN 13 1946

CLASSIFICATION CANCELLED  
PER DOC REVIEW JAN. 1973

UNCLASSIFIED

NO. [redacted] OF [redacted] COPIES, SERIES [redacted]

CONSTRUCTION OF LABORATORY FAST REACTOR USING PLUTONIUM

A REACTOR FOR EXPERIMENTAL USE WITH A NOMINAL POWER OF ABOUT TEN KILOWATTS  
 is now under construction  
 OR ABOUT ONE w/g MAXIMUM/AT LOS ALAMOS. IT CONSISTS OF AN ESTIMATED SIXTEEN  
 KG OF EXTRUDED AND MACHINED RODS OF PU-GA ALLOY, STABILIZED IN THE DELTA  
 PHASE, AND JACKETED IN HE-FILLED STEEL CANS, HELIARC WELDED AT ONE END.  
 A URANIUM METAL REFLECTOR SURROUNDS THE STEEL REACTOR ~~CAN~~<sup>TANK</sup>, IS COOLED BY  
 CONTACT WITH A WATER-COOLED AL LAYER, BACKED BY A THICK STEEL WALL. THIRTY  
 INCHES OF HANFORD-TYPE SHIELD AND EIGHTEEN INCHES OF BARYTES CONCRETE FORM  
 THE REST OF THE SHIELD. ALL ACCESS IS FROM THE TOP, WHERE REMOVABLE BLOCKS  
 FORM THE SHIELD. THE DEVICE IS COOLED BY CIRCULATING LIQUID HG PAST THE RODS  
 USING AN INDUCTION MOTOR PUMP AND EXCHANGING THE HEAT TO WATER, ALL BEHIND  
 SHIELDING. THE HG SYSTEM IS UNDER HE PRESSURE AND SEALED BY WELDS THROUGHOUT.  
 CONTROL IS OBTAINED BY MOVING URANIUM RODS IN THE REFLECTOR BY MEANS OF A  
 SELSYN MECHANISM PARALLEL TO THE AXIS OF THE REACTOR: TWO SHIM AND TWO  
 CONTROL RODS ARE PROVIDED, ALL OPERATING IN A HE-FILLED SPACE. SAFETY IS  
 ENHANCED BY A GRAVITY-FALL DEVICE USING A LARGE URANIUM BLOCK, WHICH NORMALLY  
 FORMS THE BOTTOM OF THE REFLECTOR. THE USUAL INTERLOCKS AND INSTRUMENTS ARE  
 PROVIDED.

FISSION-SPECTRUM FLUXES OF ABOUT  $2 \cdot 10^{13}$  /cm<sup>2</sup> sec AND THERMAL FLUXES (IN A  
 GRAPHITE THERMAL COLUMN) OF  $10^8$  /cm<sup>2</sup> sec ARE EXPECTED. MANY ACCESS AND BEAM  
 HOLES ARE PROVIDED, AS WELL AS SECTIONS OF "INFINITE" URANIUM AND THORIUM  
 IN PIERS IN THE STEEL OUTER REFLECTOR.

PUBLICLY RELEASABLE  
LANL Classification Group  
L. Lang 3-12-90

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L. Lang 3-12-78 FSS-16

~~SECRET~~

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To Bradbury's Office, to be teletyped.  
cc Morrison file

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This [redacted]  
the [redacted]  
such or the revelation of its [redacted]  
An unauthorized person is prohibited by law