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PUBLICLY RELEASABLE
Per BPalmentus, FSS-16 Date: 8/22/95
By [redacted], CIC-14 Date: 9/19/95

[redacted]

Classification changed by

Doc Rm J. Harrison
5-17-51

Physics - Nuclear Reactions, etc.

[redacted]

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[redacted]

[redacted] THIS ROOM [redacted] UNCLASSIFIED

(From Discussions on 4/21 -24/43)
J. H. Manley

I. [redacted]

1. Threshold detectors
   a) Fission
      J group will undertake procurement of Pa, Io and rough preliminary measurements.
      W group will extend measurements of 28 cross-section to higher energies with maximum precision and will procure and measure the fission of Th. Pa and Io will be measured when available.
   b) Other processes
      J will prepare and measure the activity of suitable n- , n-p, n- threshold detectors to be irradiated by J.
2. CIP counter
   J will continue with development of such instruments including the addition of an anti-coincidence stage for differential range measurements. Although J assumes the responsibility W and X are included in plans, personnal and testing.
3. Ion Chambers
   Similar arrangement to I.2. above.
4. Photographic Plates
   All work in W group - Richards in charge.
5. Cloud Chamber
   No work thereon contemplated.
6. Slow neutron detectors
   J will supply and calibrate thermal neutron detecting foils.

II. [redacted]

1. Short time measurements
   Fast counter studies, development of appropriate circuits, and source modulation have not been [redacted] in detail except that X, J, Froman and Bacher groups are concerned. Bacher will be responsible for communication of Radiation Laboratory techniques which are applicable.
2. Artificial fission neutron spectrum
   Neddermeyer will assume responsibility for research.
3. Fission counting with high alpha background
   Kennedy and Segre
4. Source standardization
   J will set up a graphite column for standardization of portable sources and will be responsible in a general way for such work in the laboratory.

[redacted]

III. TAMPER RESEARCH (Materials of present interest: U, [illegible], Al, Si, Pb)

1. Scattering
[illegible] will work on tamper materials with 0.3 Mev neutrons and investigate possibilities of suitable detectors for measuring inelastic scattering energy loss. The final investigation of tamper properties with other neutron energies will be done by [illegible].

2. Capture
[illegible] and Segre will investigate capture in tamper materials

3. Shell type integral experiment
This will be done by [illegible] or Fermi.

IV. PROPERTIES OF FISSIONABLE MATERIALS (25, 28, 49, 23, 01)

1. Neutron number ν.
$\nu(49)/\nu(25)$ with 200 γ of 49. It seems doubtful if a sufficiently low fast neutron background can be obtained in a cyclotron-irradiated graphite column. It can be done in Chicago or with a modulated cyclotron although in the latter case the intensity is low. Discussion as to the best method is continuing including the use of the Li(p,n) reaction as a source. Other ν's have not been discussed.

2. Spectrum
(25). Richards will measure plates already obtained and the Stanford work will continue.

3. Delayed Emission
[illegible] group will proceed with the method of Baker.

4. Spontaneous fission
Continued work by Kennedy and Segre

5. Shell type experiment on normal uranium
[illegible] or Fermi. Use of hydrogen ionization to measure [illegible] suggested by Bethe.

6. Inelastic scattering
7. Capture
8. Total cross-section
} postponed for lack of material.

9. Fission cross-sections
a) [illegible] will continue 25 with emphasis at < 0.4 [illegible] >1.0 [illegible] data. [illegible] will also measure 49, 23, 01. These are to yield absolute cross-sections.
b) $\sigma(25)/\sigma(B)$ relative measurement to check 1/v law to be done by [illegible] or with a photo-source, in the 100-100,000 volt region with boron absorbers to change the neutron energy distribution.

CC: [redacted]
W. L. Allison
H. Bacher
E. Fermi
J. Kennedy
J.R. Manley
J.R. Oppenheimer
E. Segre
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S. Waldman
J. Williams
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File

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