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By Authority of *per B.F. O'malley*
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November 26, 1947

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This Document consists of

3 Pages

D. D. STREID
 DESIGN DEPT.

234-5 BUILDING DESIGN PHILOSOPHY

Preliminary layouts of the 234-5 Building by the Design Department and by Giffels and Vallet have been studied by Technical Department personnel in consultation with members of the "S" Department and the H. I. Section. Since only minor comments about details of these prints have been transmitted to the Design Department, it has been implied that the basic design philosophy was satisfactory. Although this was not the case, little more than hints to that effect have been given in recent weeks although a more satisfactory design basis had been discussed at considerable length some months ago.

It has therefore become necessary to explain briefly the primary defect in recent layout sketches and outline the design basis which should be followed in the future. This present letter summarizes the design basis which was outlined at a meeting in F. W. Wilson's office on November 17, 1947. It is realized that this change of principles under which the Design Department has operated will set back the building layout schedule by about one month* and may thereby cause a similar overall delay in the 234-5 Project. It is felt, however, that the improved hazard control to be gained by the new layout more than justifies this penalty.

The attached Figure 1 shows in schematic form the basis of design used in the previous layout sketching, whereas Figure 2 depicts the new principle which it is desired to adopt. In both figures, section 1 is a "non-regulated" zone in which no plutonium is handled and the risk of contamination is practically non-existent, section 2 is a "semi-regulated" zone where plutonium is processed by remote control through solid barriers, section 3 is a "regulated" zone from which plutonium or contaminated materials are handled directly, and section 4 is the highly "regulated" space inside equipment enclosures where surface and air contamination may be above tolerance levels. (Section 2 is listed as semi-regulated because it is hoped that the barrier principle will be sufficient protection against contamination to permit the section to be reclassified as a section 1 at a later date.)

*First official layout print (No. 3) issued to Technical Department, October 17, 1947.

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As is evident from the figures, the primary advantage of the new layout is an elimination of unnecessary transfers of product charges through section 3 corridors which personnel must enter for routine and non-routine servicing. With the old layout it would be necessary to develop safe packaging procedures to transport product charges via personnel corridors from the sample can vault to Part I, from Part I to a vault, from this vault to Part II, from Part I to Recovery Storage, from Part II to Recovery Storage, from Recovery Storage to Recovery Operation, from Recovery Operation to Part I or Part II or a vault for recycling to another building, and from Part II to a vault for final storage. With the new layout only the first and last of these transfers need be made in section 3, the rest being done within section 4 by mechanical manipulation. Two other types of transfer of small quantities of product, movement of samples from Part I, Part II, and Recovery to the laboratory and removal of packaged solid wastes for burial, must also pass through section 3 in both types of layout.

Although these revised design principles reduce the flexibility of operation, eliminate simple building expansion in the future, and complicate the security segregation of Part I and Part II, it is believed that a satisfactory layout can be obtained. The Design Department is therefore requested to proceed on the new basis outlined above.

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Figure 1

Figure 2

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