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 TO: I. Spiewak
 FROM: B. D. Draper

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In order to reduce the number of leakage paths that exist in a flanged system, the flange design shown on Drawing A is submitted.

It is proposed that standard welding neck "O-Ring" flanges with special welding lips on the face side be used the following manner. At a pre-determined position on each side of all removable components, weld a flange-half as shown on the drawing. To this permanent piece, connect the leak detector tubing.

To replace a component:

1. Cut pipe at face of the pre-positioned flange.
2. Attach mating flange-half (pre-fitted with "O-Ring" if possible in a jig as presently used.
3. Attach "O-Ring" to flange-half on component and place in system and bolt up.

The following advantages may be derived from this design:

1. This gives effectively an all welded system, at least at start up, with provisions for component replacement as needed. A possible application would be in the HRE-3, where the benefits of an all-welded system could be enjoyed. If a remote welder is developed, it could be applied to maintenance of the reactor, or if none is available after start up of the HRE-3 maintenance could still be performed using the flanges.
2. Permits the use of the leak detector system only as flanges are placed in use. This eliminates the necessity of maintaining the whole leak detection system from the beginning of operation.

A possible disadvantage might occur in the cutting operation in regard to introducing metal particles to the system, however, this problem may

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be faced by all systems designed to use remote cutting and welding for maintenance and means should be devised which will permit the pipe to be cut without introducing particles to the system.

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Attachment - Figure A

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PRE-POSITIONED FLANGE

DRAWING A