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LOADING AND OPERATING CONDITIONS FOR PT-IP-314-A, SUPPLEMENT F, IN KER-1

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LOADING AND OPERATING CONDITIONS FOR
PT-IP-314-A, SUPPLEMENT F, IN KER-1

Supplement F(1) to Production Test IP-314-A authorized an upstream thermocouple train in KER-1. This document provides fuel element loadings, operating temperatures, and trip settings for two possible charges in KER-1, one using KSE-3 heater elements and the other using KSN-3 heater elements.

For a charge containing KSE-3 elements, the loading is given in Table 1, page 3, and the operating conditions are given in Figure 1, page 4. For a charge containing KSN-3 elements, the loading is given in Table 2, page 5, and the operating conditions in Figure 2, page 6. In Figure 1 and 2, the dashed lines indicate the desired operating temperature and trip settings needed to maintain the maximum uranium temperature below 660°C. In the absence of other information, the dashed lines will guide the selection of operating conditions. One of the thermocouples in the thermocouple element, however, indicates the maximum uranium temperature directly. Based on the thermocouple readings, the outlet temperature and trip settings may be set to exceed or fall short of the values designated by the dashed lines provided.

2. The temperatures do not exceed the limitations set by the solid lines which are based on the requirements that boiling will not occur on the fuel elements during normal operation and burnout will not occur at the limiting trip conditions.
3. The maximum uranium temperature shall not exceed 660°C.

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- 1) Kratzer, W. K. Production Test IP-314-A, Supplement F, Measurement of Fuel Element Temperature Changes as the Result of Film Deposition, HW-67491.
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TABLE I

FUEL LOADING FROM UPSTREAM END OF PROCESS TUBE
USING KSE-3 HEATER ELEMENTS

<u>POSITION</u>	<u>NUMBER</u>	<u>MATERIAL</u>
1	1	Thermocouple Train
2-16	25	Eight-inch Spacers
17	2	Eighteen-inch KSE-3 Element
18	2	Eighteen-inch KSE-3 Element
19	2	Eighteen-inch KSE-3 Element
20-27	18	Eightinch Spacers

FIGURE I

Operating Temperature and Trip Settings
As a Function of the Observed Tube ΔT
For a Loading with KSE-3 Heater Elements.

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TABLE 2

FUEL LOADING FROM UPSTREAM END OF PROCESS TUBE
USING KSN-3 HEATER ELEMENTS

<u>POSITION</u>	<u>NUMBER</u>	<u>MATERIAL</u>
1	1	Thermocouple Train
2-5	4	Eight-inch Spacers
6	1	Sixteen-inch KSN-3 Element
7-12	6	Eight-inch Spacers
13	1	Sixteen-inch KSN-3 Element
14-16	3	Eight-inch Spacers
17	1	Sixteen-inch KSN-3 Element
18-38	21	Eight-inch Spacers

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FIGURE 2

Operating Temperatures and Trip Settings
As a Function of the Observed Tube ΔT
For a Loading with KSN-3 Heater Elements

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