ATTACHMENT 2

TO P-89395

PROPOSED CHANGES

within the spacer blocks. The middle layer of lower reflector elements, excluding the central element in each core region, contains 25 weight percent boronated graphite pellets enclosed in hastalloy-X cans. The top layer of reflector above the hexagonal columns contains 1 weight percent crushed boronated graphite. The top layer of reflector above the permanent side reflector blocks contains 1 weight percent boronated graphite enclosed in steel cans.

Defueling

Defueling elements containing no fuel and made from grade H-091 graphite, which is equivalent to the grade HLM graphite used for permanent side reflector blocks, will be used to replace fuel elements during defueling. The defueling elements have the same outer dimensions as the fuel elements that they will be replacing. All defueling elements are of the same design, regardless of whether they are used to replace standard fuel elements or control column fuel elements from the central column of the region. Defueling elements do not have control rod channels or reserve shutdown holes. (The control rods will not be reinstalled in a defueled region.) Each defueling element has ninety (90) coolant channels which will align with the coolant channels of the elements above and below. In addition, twelve (12) holes are blind drilled and loaded with boronated graphite lumped poison pins (LPP), with a

boron loading equivalent to about 350 ppm of homogeneous natural boron to replace the negative reactivity of the control rods.

The essentially right circular cylindrical geometry of the core that is modeled in the GAUGE code will be retained during defueling. The outer ring of fuel elements (Regions 20-37) will be replaced with defueling elements first. The next most outer ring of fuel elements (Regions 8-19) will be replaced second. The central regions of fuel elements (Regions 2-7 and 1) will be replaced last.

The top layer reflectors may be replaced with reflectors not containing boronated graphite in selected regions during defueling to maintain neutron count rate. Neutron source material, Californium 252, will also be added as necessary to maintain a neutron count rate above the required minimum until a demonstration of subcriticality has been performed in which all control rods have been withdrawn with a calculated k(eff) not greater than 0.95 assuming the conditions specified by SR 4.1.4 for SHUTDOWN MARGIN determination. After the demonstration, the startup channel low count rate rod withdrawal prohibit may be bypassed and the minimum count rate need not be maintained. However, the startup channel high count rate scram will remain in service to respond to any approach to criticality.

Basis for Specification DF 6.1

The above specifications form the general design bases and criteria for the overall design features of the reactor core which were used to evaluate its general performance. Further details concerning these design features are given in Section III of the FSAR, the Safety Analysis Report for Fort St. Vrain Reload 1 Test Elements FTE-1 through FTE-8, General Atomic Document GLP-5494, June 30, 1977, and the Safety Analysis Report For Reactor Defueling, General Atomics Document GA-C19694.

ATTACHMENT 3

TO P-89395

NO SIGNIFICANT HAZARDS

CONSIDERATION ANALYSIS

NO SIGNIFICANT HAZARDS CONSIDERATION ANALYSIS

BACKGROUND:

The defueling elements are constructed similar to fuel elements. The defueling elements contain lumped poison pins (LPP's) that replace the negative reactivity of the control rods.

Shutdown margin will be maintained during defueling in accordance with Reactivity Technical Specification LCO 3.1.4, LCO 3.1.6, SR 4.1.4, and SR 4.1.6 similar to a refueling.

The Safety Analysis Report, GA-C19694, analyzed the FSAR accidents contained in Chapter 14 of the Fort St. Vrain FSAR for potential effects of defueling. All accidents during defueling were determined to be bounded by current FSAR analysis or were no longer applicable. The analysis of earthquake, reactivity accident, column deflection and misalignment, misplaced fuel element, blocking of coolant channel, electrical incidents, loss of normal shutdown cooling, moisture ingress, fuel storage accidents, and permanent loss of forced circulation (DBA-1) were determined to be bounded by current analyses. Another five accidents, all involving loss of primary coolant, were determined to be no longer applicable.

EVALUATION:

PSC has evaluated the proposed amendment request for significant hazards consideration using the standards in Title 10, Code of Federal Regulations, Part 50.92. The proposed amendment request involves no significant hazards, since the proposed amendment would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   The reactor fuel elements will be replaced with defueling elements that contain boronated graphite and no fuel. The startup channels will continue to monitor core reactivity. The structural and thermal characteristics of the reactor will remain unchanged. Procedures for removing the fuel elements will be maintained similar to a refueling. The insertion of the defueling elements will also be similar to a refueling except that the defueling elements will contain boron carbide, will not contain fuel, and control rods will not be reinstalled. Adequate shutdown margin will continue to be assured in accordance with Reactivity Technical Specifications LCO 3.1.4, LCO 3.1.6, SR 4.1.4, and SR 4.1.6.

The Safety Analysis Report, GA-C19694, analyzed the FSAR accidents contained in Chapter 14 of the Fort St. Vrain FSAR for potential effects of defueling. All accidents during defueling were determined to be bounded by current FSAR analysis or were no longer applicable. The analysis of earthquake, reactivity accident, column deflection and misalignment, misplaced fuel element, blocking of coolant channel, electrical incidents, loss of normal shutdown cooling, moisture ingress, fuel storage accidents, and permanent loss of forced circulation (DBA-1) were determined to be bounded by current analyses. Another five accidents, all involving loss of primary coolant, were determined to be no longer applicable.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

   No significant change is being made to plant operation or safety system operation as described in Item 1.

3. Involve a significant reduction in a margin of safety.

   No significant change is being made to refueling procedures (which will be used for defueling), core materials, reactivity monitoring systems, core structural design, or shutdown margin determinations as described in Item 1. Therefore, no significant change in any margin of safety is involved.

CONCLUSION:

Based on the above evaluation, it is concluded that operation (Defueling) of Fort St. Vrain in accordance with the proposed changes will involve no significant hazards consideration.