Attachment 1

REFUELING OPERATIONS

3/4.9.6 REFUELING PLATFORM

LIMITING CONDITION FOR OPERATION

3.9.6 The refueling platform shall be OPERABLE and used for handling fuel assemblies or control rods within the reactor pressure vessel.

APPLICABILITY: During handling of fuel assemblies or control rods within the reactor pressure vessel.

ACTION:

With the requirements for refueling platform OPERABILITY not satisfied, suspend use of any inoperable refueling platform equipment from operations involving the handling of control rods and fuel assemblies within the reactor pressure vessel after placing the load in a safe condition.

SURVEILLANCE REQUIREMENTS

4.9.6 Each refueling platform crane or hoist used for handling of control rods or fuel assemblies within the reactor pressure vessel shall be demonstrated OPERABLE within 7 days prior to the start of such operations with that crane or hoist by:

a. Demonstrating operation of the overload cutoff on the main hoist when the load exceeds (1200 ± 50)* pounds. 1700

b. Demonstrating operation of the overload cutoff on the frame mounted and monorail hoists when the load exceeds 485 ± 50 pounds.

c. Demonstrating operation of the uptravel electrical stop on the frame mounted and monorail hoists when uptravel brings the top of active fuel assembly to 7 feet 6 inches below the minimum fuel storage pool water level.

d. Demonstrating operation of the downtravel electrical cutoff on the main hoist when grapple hook down travel reaches 54 feet 2 inches below track (< 554 inches as indicated).

e. Demonstrating operation of the slack cable cutoff on the main hoist when the load is less than 50 pounds.

f. Demonstrating operation of the loaded interlock on the main hoist when the load exceeds (485 ± 50)* pounds. 750

g. Demonstrating operation of the redundant loaded interlock on the main hoist when the load exceeds (550 ± 50)* pounds. 750

*Values in parenthesis are applicable to NF400 mast.

1. Discussion of Proposed Changes to Surveillance 4.9.6a.

As discussed in References 1 and 2, General Electric (GE) has stated that a "maximum cable tension of 2,000 [lbf] is acceptable" for both the reactor internals and GE fuel. To evaluate this in terms of the maximum allowable force which can be applied to a fuel assembly or to the vessel internals, the submerged weight of the last section of the mast and the grapple is subtracted from the cable tension of 2,000 lbf. Therefore, this force is approximately 1840 lbf, see Figure 1. This value is conservative for GE fuel with respect to GE Design Specification 22A478 Revision 8, which states that the maximum upward force for handling fuel not exceed 3g or 3 times the fuel assembly weight (or approximately 1875 lbs).

The Supply System has investigated the maximum allowable force which can be applied to Siemens Power Corporation (Siemens) fuel. A March 16, 1993 letter from Siemens indicated that an acceptable force for WNP-2 Siemens fuel was bounded by GE Design Specification 22A478. Conversation on March 16, 1994 between Supply System staff and Siemens personnel determined that an allowable load of 2.5g or 2.5 times the fuel assembly weight (or approximately 1598 lbs) should be used based on the WNP-2 Siemens fuel specification, although Siemens feels that this value is very conservative.

The Supply System has also investigated the maximum allowable force which can be applied to the WNP-2 ABB fuel. Based on testing as documented in ABB Report 89-10-23 and ABB correspondence dated September 21, 1993, and March 17, 1994, a 1600 lbf force applied to an ABB fuel assembly is acceptable.

Therefore, the limiting parameters and values are considered as:

Approximate Stress Limit on Vessel Internals	1840 lbf
Approximate Stress Limit on GE Fuel Assembly	1840 lbf*
Approximate Stress Limit on Siemens Fuel Assembly	1598 lbf
Approximate Stress Limit on ABB Fuel Assembly	1600 lbf.

For a main hoist overload cutoff Technical Specification setpoint of 1700 lbf, electrical calculation EI-02-93-1200 ensures that instrument accuracy, setpoint drift, reel tension, and other pertinent factors are addressed such that the main hoist overload cutoff will trip before or at 1700 lbf. For this 1700 lbf setpoint, the maximum upward force on the reactor internals or a fuel assembly will be 1700 lbf minus the submerged weight of the last mast section and the grapple (approximately 160 lbs submerged or 180 lbs dry weight) or approximately 1540 lbf, see Figure 2. This effective force of approximately 1540 lbf is less than the limiting values for the vessel internals or any type of fuel assembly.

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*bounds 1875 lbf per GE fuel specification

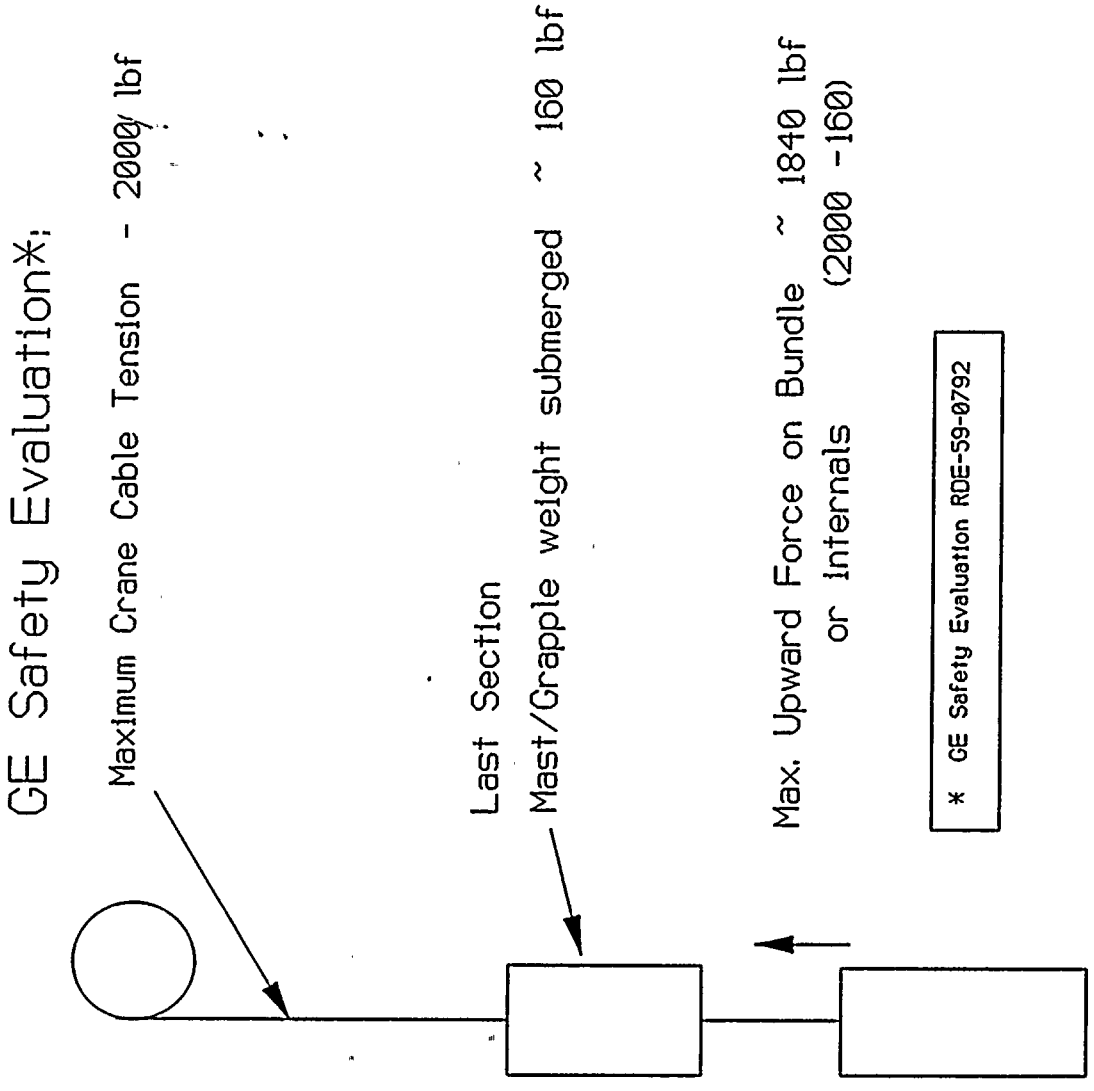
GE Safety Evaluation*:
Maximum Crane Cable Tension - 2000 lbf
Last Section
Mast/Grapple weight submerged ~ 160 lbf
Max. Upward Force on Bundle ~ 1840 lbf
or Internals (2000 -160)
* GE Safety Evaluation RDE-59-0792

Figure 1

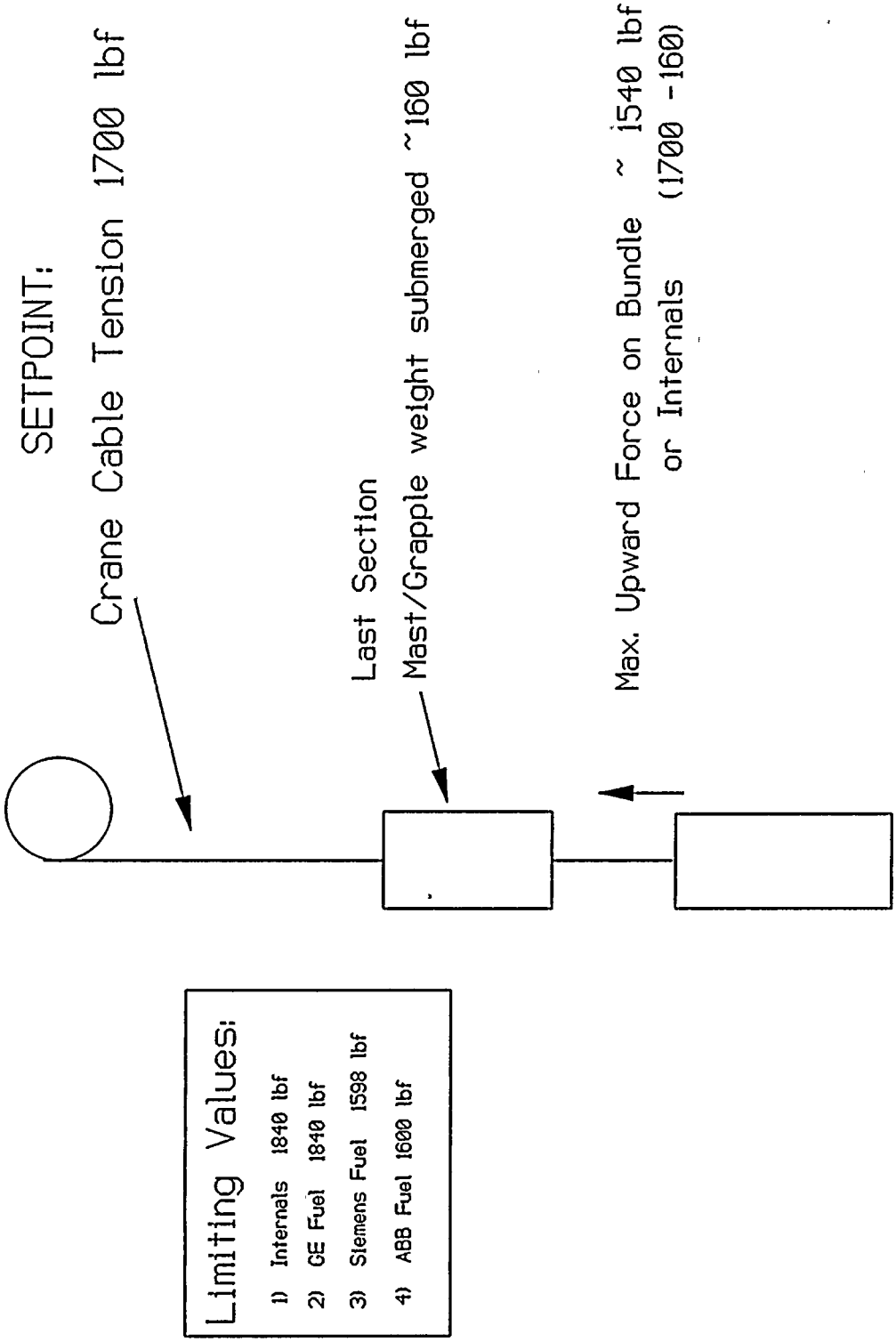
SETPOINT:
Crane Cable Tension 1700 lbf
Last Section
Mast/Grapple weight submerged ~160 lbf
Max. Upward Force on Bundle ~ 1540 lbf
or Internals (1700 -160)
Limiting Values:
1) Internals 1840 lbf
2) GE Fuel 1840 lbf
3) Siemens Fuel 1598 lbf
4) ABB Fuel 1600 lbf

Figure 2

2. Discussion of Proposed Changes to Surveillances 4.9.6f. and 4.9.6g.

The main hoist loaded interlock setpoints are increased to 750 lbf. This setpoint is the GE recommended value and accounts for the heavier weight of mast. The setpoint adjustment is not solely due to the change in weight, however. Discussion with GE personnel verifies that this value was empirically developed during the course of mast development with the prototype. The main hoist interlock setpoint has been established to provide a positive grapple loaded signal (when grappling fuel) but not to provide a false grapple loaded signal when detracting the mast. GE development established that the increased inertia of the individual mass sections caused a higher spike response from the load cell weighing system than the old mast. Therefore, the setpoint change addressed this concern in addition to the increase on the basis of weight.

3. Additional Information

In response to an NRC question, it is noted that the submerged weight of a GE fuel assembly is approximately 565 lbs, of a Siemens fuel assembly is approximately 578 lbs, and of an ABB fuel assembly is 582 lbs.

The Supply System notes that in the discussion in Item 1 above, and in Figures 1 and 2, the limiting parameters are the forces (lbf) applied to a hung fuel assembly and/or the vessel internals. The free weight of any type fuel bundle (dry or submerged) plus the last mast section and grapple weights, will be significantly less than the main hoist overload cutoff setpoint of 1700 lbf.