

# NCSX

## Product Requirements List For the Vacuum Vessel System Heater Tapes

**NCSX-PRL-12-002-00**

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Prepared by: \_\_\_\_\_

P. L. Goranson, Vacuum Vessel System (WBS 12) Manager

Concur: \_\_\_\_\_

L Dudek, Technical Representative for Vacuum Vessel System (WBS 12) Procurements

Concur: \_\_\_\_\_

F. Malinowski, Quality Assurance

Approved by: \_\_\_\_\_

B. Nelson, RLM for Stellarator Core Systems (WBS 1) Design and Procurement

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NCSX-PRL-12-002 Vacuum Vessel System Heater Tapes

**Record of Revisions**

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| Revision | Date    | ECP | Description of Change |
|----------|---------|-----|-----------------------|
| Rev. 0   | 8/24/06 |     | Initial Release       |

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## **1 SCOPE**

This requirements list covers the procurement of flexible resistance heater tapes (Heaters) for the National Compact Stellarator Experiment (NCSX) Vacuum Vessel (VV), including the supply of all required labor and materials, machining, and fabrication. The Seller shall deliver the Heaters to the Princeton Plasma Physics Laboratory (Laboratory).

## **2 REQUIREMENTS**

### **2.1 General**

The Heaters are intended for baking of a vacuum vessel which is contained within a cryostat operated at liquid nitrogen temperatures (77K).

### **2.2 Recommended source**

BriskHeat  
BH Thermal Corp.  
Columbus, OH

Briskheat product:  
PPY491001

### **2.3 Characteristics**

#### **2.3.1 Magnetic Permeability**

The Heater and connector components, with the exception of the hookup leads, shall not exceed 1.02.

#### **2.3.2 Dimensions and Tolerances**

The Heaters shall be nominally 1/2 inch wide by 0.19 compressed thickness, by 10 feet long

#### **2.3.3 Heater Construction**

The heater tapes shall be of a single ended construction terminated in a ceramic plug connector

The connector shall be a ceramic or polymer material capable of operating across the temperature range referenced under 2.5.3.

The over wrap insulation shall be of a braided fabric construction

#### **2.3.4 Heater power requirements and output**

The Heater wattage shall be 520 watts at 120 VAC, single phase

## **2.4 Cleaning**

The Heater surfaces shall be free of contaminants, include oils, greases, and lubricant residues resulting from handling and fabrication of the Heaters.

## **2.5 Operation Parameters**

### **2.5.1 Media**

Dry nitrogen gas.

### **2.5.2 Pressure**

Atmospheric

### **2.5.3 Temperature**

The heater tape shall be rated for 760 C maximum.

The leads and connector shall be capable of operation across a temperature range of 77 K to 350 C.

## **3 PREPARATION FOR DELIVERY**

### **3.1 Labeling**

Heaters shall be supplied with tags attached near the connector end marked with Manufacturer's name, address, unique lot/serial numbers, power requirements, and sizes and to provide positive identification.

### **3.2 Packing and Skidding**

The Heater and its components shall be sealed and packaged to provide protection against contamination, deterioration and damage during shipment. The Seller shall contact the Laboratory ten days prior to shipment of the order to confirm shipping method and route.

### **3.3 Marking**

Each shipment shall be marked with the name of the Seller, Laboratory Purchase Order Number, the component name, and gross weight.