



KRUPP POLYSIUS CORP.

180 Interstate Parkway
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Phone: (770) 955-3660 Fax: (770) 955-8789



TELEFAX

To:	Georgia DNR	Date:	July 08, 1999
Attn:	Eric Jameson	Pages Sent:	5
CC:	Joe Tanner	Telefax No.:	404-362-2653
From:	Anya Gill	Phone No.:	
Subject:	Responses to CNA questions	TC#:	7401-7127

Dear Eric;

Here are the responses to the questions generated during our meeting last week.

1. How is the neutron flux generated?

This is explained in our technical information supplied with the application. The neutron tube works like a small accelerator. A beam of deuterium ions is directed onto a target containing tritium hydride. When one ion of deuterium hits one atom of tritium, then one neutron is emitted coming from the fusion reaction $D+T \rightarrow n + \alpha$ and the remaining alpha particle stays (is absorbed) in the neutron tube. So there is no tritium oxide in the tube.

*asked questions
phone: 7/12/99
where does the
2H come from?*

2. The columnated beam of neutrons comes out from where on the source?

Neutrons are emitted in all directions around the target of the tube. The neutrons are emitted spherically from the target at the tip of the tube. The tube cannot produce columnated beams of neutrons.

OK

3. What type of testing was done to establish that the Sodern tube is a sealed source.

Each tube is tested during the manufacturing process with respect to micro-leakages. In addition, in case of a very small leakage, the replenisher inside the tube would be poisoned and the tube would be out of order.

*define, give
provide
make-up;*

4. What are the loading tolerances of the source?

Tritium loading tolerance of the source is 3.3 Ci +/- 10%

*copy of SODERN
sealed source cert. ?
OK*

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TELEFAX**5. What is the access to the on/off switch?**

There are two ways to start the neutron emission.

1. Directly at the cabinet next to the CNA unit, a user might login into the control software and enter his login level and password. He can then switch on the neutron emission.
2. From the POLCID control system, the user is also able to log in and switch on the neutron emission.

In any case, the neutron emission would only start after a minute while the flashing light indicates that the analyzer will start neutron emission.

After an emergency stop has been triggered, the analyzer can only be started up after a special key at the cabinet has been turned for confirmation. That is, after an emergency stop the operator cannot start neutron emission remotely from the POLCID system any more. He has to go on site and check. The off switch is, however, accessible at any time. The emergency stop switches around the analyzer or at the cabinet or via the POLCID are accessible at any time and from any access level.

6. What are the displays on the unit that indicate it is on?

There is a pole-mounted flashing light that is flashing when the unit is on.

7. US regulations require that labels be provided and installed by the distributor.

We will deliver labels and warning plates with the analyzer for the analyzer itself.

8. Copy of agreement showing that SODERN knows spent tubes will be returned to them

SODERN has attached agreement (attachment A) that is part of the contract.

9. What type of instruments were used to develop the radiation profile? On what date was the survey done and what were the calibration dates on the meters used?

The instruments used for the radiation profile were the same as presented in our application. The latest testing was performed May 13-16, 1999. The gamma counter used was calibrated on April 22, 1999 and the other two instruments were calibrated in May 1998.

OK

OK

copy of
label information
on labelattachment A is
buyer's agreement

OK

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TELEFAX**10. Quality Assurance and control program and ISO certificate**

The ISO Certificate from SODERN is attached in Attachment B.

*summary of QA
steps/checks during
manufacturing?*

11. Confirmation that Krupp Polysius Corporation in Atlanta would be in the loop on any design changes originating in Europe.

We confirm that Krupp Polysius Corporation in Atlanta would be in the loop on any design changes. When these design changes occur, we understand we will be required to seek an amendment to our license.

12. What fire testing protocol was used and what were the results?

The MEN unit was placed in a laboratory furnace at 600 deg. C for one hour and then thrown into cold water. It was transferred to SODERN who cut it open and checked. The tube was not destroyed only the plastics surrounding it had slightly melted.

13. Operator manual and a clear section on do's and don'ts when the device is on.

Frankly, there are not many do's and don'ts while the machine is in operation. However, the manual is being translated into English at the present time and can be made available.

*who will perform
tube exchanges -
Polysius or customer?*

14. Dosimetry badges

We have dosimetry badges. Because of the very high level of radiation safety within the CNA, the German authorities have said it isn't necessary in Germany. We do have 8 badges which can be used for neutrons and gammas at the same time. They would be sent in monthly to the Materialprüfungsamt in Dortmund to have them checked. Will these dosimetry badges be required or recommended for our personnel?

Please feel free to contact me if I can provide any additional information. I look forward to working through this process as quickly as possible.

Best Regards,

Anya Gill
Product Manager - Automation

Att. A

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SODERN NEUTRON TUBES AND NEUTRON GENERATORS: PARTICULAR COMMITMENTS OF THE END USER OUTSIDE FRANCE

First commitment:

As the neutron tube is listed as equipment subject to authorisation under the Nuclear Non-Proliferation Act as well as to a verification of final destination, the sale of the neutron tube is subject to the issue of an export licence and the buyer's obligation not to re-export the tube to any third country. Furthermore, it is forbidden to remit a tube to any third party whether the tube charged or not.

Second commitment:

The buyer herewith obliges himself to return the tube or the MEN (neutron-emitting module) with the tube to the manufacturer at the end of the tube's service life or at the latest ten (10) years after the date of delivery. The manufacturer's address is:

SODERN
20, Avenue Descartes
F- 94451 - LIMEIL BREVANNES Cédex
FRANCE
Phone: (33).1.45.95.70.00
Fax: (33).1.45.95.71.77

Read and approved by customer:



Certificate of Approval

Awarded to:

SODERN
LIMEIL-BREVANNES - FRANCE

*Bureau Veritas Quality International certify that the
Quality Management System of the above supplier
has been assessed and found to be in accordance
with the requirements of the quality
standards detailed below*

QUALITY STANDARDS

EN ISO 9001: 1994

SCOPE OF SUPPLY

**DESIGN, DEVELOPMENT, MANUFACTURING OF SYSTEMS AND EQUIPMENT IN THE
AREAS OF NEUTRONICS AND NEUTRONICS APPLICATIONS SPACEBORNE
OPTRONICS AND INDUSTRIAL OPTICS**

**CONCEPTION, DEVELOPPEMENT, REALISATION DE SYSTEMES ET D'EQUIPEMENTS DANS LES
DOMAINES DE LA NEUTRONIQUE ET DE SES APPLICATIONS, DE L'OPTRONIQUE SPATIALE
ET DE L'OPTIQUE PROFESSIONNELLE**

Original approval date: **8 October, 1998**

*Subject to the continued satisfactory operation of the supplier's
Quality Management System, this Certificate is valid for a period of three years from:*

8 October, 1998

Date **14 October, 1998**

Jacques ROY

For Bureau Veritas Quality International



Certificate No: **51130**

SF06/M