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FROM: John W. Hickey, Chief
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SUBJECT: REVISED GUIDANCE FOR LICENSING INTRAVASCULAR
BRACHYTHERAPY PROCEDURES

This memorandum provides revised guidance for licensing intravascular brachytherapy (IVB) procedures. It supersedes Dr. Cool's memorandums dated January 26, February 5, **and June 12, 2001**.

The attached guidance should be used in reviewing medical use applications requesting authorizations for IVB procedures. The key change from the previous guidance is that guidance for the Guidant GALILEO IVB system has been added. For your convenience, a second attachment is included which highlights the changes changes in boldface type.

Attachment: Revised IVB Licensing Guidance

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(Revised 12/12/01)
**Guidance to NRC Regions for Licensing
Cordis, Novoste, and Guidant Intravascular Brachytherapy Systems**

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General approach: License as a brachytherapy procedure pursuant to an exemption from 35.400, "Use of sources for brachytherapy". Intravascular brachytherapy (IVB) is not listed in 35.400 as an authorized use. Therefore, an exemption from this provision of Part 35, "Medical Use of Byproduct Material", is being issued by license condition, pursuant to 10 CFR 35.19. This exemption is based on a finding that it is authorized by law, and will not endanger life or property or the common defense and security, subject to the additional license conditions discussed below.

The exemption does not relieve the licensee from compliance with the other requirements of 10 CFR Part 35. In particular, 10 CFR 35.32, "Quality management program", requires licensees to establish and maintain a written quality management program to provide high confidence that radiation from byproduct material will be administered as directed by the authorized user. [Note: "Source stepping" is permitted, if the licensee establishes appropriate procedures in accordance with 10 CFR 35.32(a). Source stepping procedures are not covered by the manufacturers' instructions, **with the exception of a specific single pullback/step procedure for the Guidant system (see "Conditions for the Guidant System")**, so the licensee could not merely follow the manufacturer's instructions if the licensee chooses to conduct source stepping. Note that, because IVB is a new technology, and the devices deliver high dose rates (greater than 1200 rads per hour), certain training and physical presence guidance is included.

The authorized use is not restricted to procedures reviewed and approved by FDA as part of the FDA pre-market approval (PMA). Note that 35.7 states that nothing in Part 35 relieves a licensee from complying with applicable FDA, other Federal, and State requirements.

A. IVB Guidance for Limited Specific Use Medical Licensees

1. Conditions for Cordis, Guidant and Novoste Systems

–Commit that authorized users will meet the training and experience requirements in 10CFR 35.940, "Training for use of brachytherapy sources".

–Commit that the authorized user, interventional cardiologist/physician, and medical physicist will receive the vendor training for use of the device.

–Commitment or license condition as follows: Procedures will be conducted under the supervision of the authorized user, who will consult with the interventional cardiologist/physician and medical physicist prior to initiating treatment. The procedures will be conducted in the physical presence of the authorized user or the medical physicist.

–Commit that prior to treatment, the written directive will specify treatment site, the radionuclide, and dose.

–Commit to independent measurement of source output by the medical physicist, prior to the first patient treatment. **Also, describe the instrumentation used to perform these calibrations and confirm that the instrument has been appropriately calibrated by a laboratory accredited by NIST or AAPM with the previous two years and after any servicing that may have affected system calibration. (See §35.630(a)(1) for comparable requirements)**

–Commit to developing, implementing, and maintaining written emergency procedures for both stuck and detached sources, including the provision of appropriate emergency response equipment and any appropriate surgical procedures.

–Commitment that survey of patient and IVB treatment catheter is performed immediately following source retraction or removal to confirm complete retraction of the source(s) as specified in §35.404(a).

2. Conditions for the Cordis System

–Commit that source trains will not be used after the “use by” date.

–Applicant should submit calculations and/or measurements demonstrating compliance with Part 20 requirements, and guidance on the use of portable shields, as appropriate.

–License condition 8 should read (for each ribbon set requested): No single seed to exceed 35 millicuries, in a three-ribbon set containing 6, 10, or 14 seeds per ribbon, 1.1 curies total (per set)

–License condition 9 should read: Notwithstanding the requirements of 10 CFR 35.400, for use in the Cordis Checkmate Catheter System for intravascular brachytherapy.

--Cover letter should state that the licensee’s Quality Management Program should be revised as appropriate.

3. Conditions for the Novoste System

–In order to protect the radiation safety of patients and to reduce the risk of misadministrations, commit to use of an introducer sheath, unless such use is contraindicated for an individual patient.

–In order to protect the radiation safety of patients and to reduce the risk of misadministrations, commit to use of a dual syringe system, unless such use is contraindicated for an individual patient.

–Commit to locked storage of the storage container in a secure location.

–Commitment or license condition that the device shall be inspected and serviced at intervals recommended by the manufacturer, and that maintenance and repair shall be performed only by the manufacturer or persons specifically licensed by NRC or an Agreement State to perform such services.

–License condition 8 should state: 12 sources per train, not to exceed 4.2 millicuries mean activity per source, 51 millicuries total **(for Model A1732) and/or 16 sources per train, not to exceed 4.2 millicuries mean activity per source, 68 millicuries total (for Model A1733)**. (for each source train requested by applicant)

The FDA Pre-Market Approvals (PMA) allow Novoste to distribute Model A1732 devices with source trains up to 48 millicuries **and the Model A1733 devices with source trains up to 68 millicuries**, with a maximum mean source activity of 4.0 millicuries per source. The license authorization of 4.2 millicuries mean source activity and 51 millicuries total allows for measurement variations between Novoste and the licensee users.

–License condition 9 should read: Notwithstanding the requirements of 10 CFR 35.400, for use in Novoste Beta-Cath System Model A1732 **and/or Model A1733** devices for intravascular brachytherapy, as applicable.

–Cover letter should state that: (1) the licensee’s Quality Management Program should be revised as appropriate, and (2) source separations during treatment should be evaluated as possible misadministrations.

–Note: Shielding calculations are not necessary for areas outside the treatment room and device storage areas, because Sr-90 is a beta emitter.

4. Conditions for the Guidant System

–Commit that source assembly/cartridge will not be used for greater than 60 days or 650 cycles, whichever comes first, in accordance with the manufacturer’s guidance.

–Cover letter should state that the licensee’s Quality Management Program should be revised as appropriate.

–Commit to locked storage of the delivery device and source assembly. Also commit to key control for the console key.

–Note: Shielding calculations are not necessary for areas outside the treatment room and device storage areas, because P-32 is a beta emitter.

–Commitment or license condition that the device shall be inspected and serviced at intervals recommended by the manufacturer, and that maintenance and repair shall be performed only by the manufacturer or persons specifically licensed by NRC or an Agreement State to perform such services.

–License condition 8 should state: 600 millicuries per source assembly; 2 source assemblies total.

–License condition 9 should read: Notwithstanding the requirements of 10 CFR 35.400, for use in Guidant Corporation VI Model GALILEO Intravascular Brachytherapy High Dose Rate Afterloader devices for intravascular brachytherapy.

–Commitment that daily checks are performed (prior to patient treatment) in accordance with the manufacturer’s instructions to include: console operational checks, indicator lamps, source status indicators; visual inspection of the integrity of the source centering catheter and connectors; and source positioning accuracy.

–Commitment that the following tests are performed at each source exchange (prior to patient treatment): contact radiographs to check integrity of welds; source uniformity via autoradiograph; source positioning accuracy within +/- 1 mm; battery backup for emergency source retraction upon power failure; source transit time to meet manufacturer’s specifications; and timer accuracy and linearity to meet manufacturer’s specifications.

–The FDA approval includes a single step or pullback procedure, where the proximal position of the first treatment site is coincident with the distal position of the second treatment site in the center of the stent, is authorized. Alternative stepping or pullback procedures are subject to §35.32, as stated under the “General Approach” section of this document.

B. IVB Guidance for Medical Broad Licensees

–If the medical broad license already covers possession of the radioactive material, then no amendment is required to authorize intravascular brachytherapy. Note that condition 9 of broad medical licenses does not limit brachytherapy uses to those listed in 35.400.

–If the medical broad license possession limits do not cover the radioactive material, then the possession limits can be amended accordingly by the licensing staff.