

**Ombudsman’s Summary of the Scientific Issues in Dispute for the Medical Devices
Dispute Resolution Panel Meeting on Cardima, Inc.’s REVELATION Tx
Microcatheter Ablation System***

The REVELATION Tx Microcatheter Ablation System, manufactured by Cardima, Inc., has as its proposed indication for use the treatment of atrial fibrillation (AF) in patients with drug refractory paroxysmal AF.

The Office of Device Evaluation (ODE) has determined that the Cardima Premarket Approval Application (PMA) (P020039) is not-approvable because the clinical study design and results were inadequate to demonstrate a reasonable assurance of safety and effectiveness of the REVELATION Tx Microcatheter Ablation System indicated for the treatment of drug refractory paroxysmal atrial fibrillation. ODE believes that the safety and effectiveness information collected thus far provides some support for the safety and effectiveness of the device, but fundamental problems with the study design limit the conclusions that can be drawn from these data.

The deficiencies outlined by ODE include, but are not limited to, the following: the lack of a control arm made the trial susceptible to placebo effects; the clinical study lacked an accurate measurement of effectiveness endpoints due to several confounding factors; and the data provided demonstrates that the NavAblator was not sufficiently effective in creation of bi-directional conduction block (BDB) at the cavo-tricuspid isthmus.

Cardima disagrees with ODE’s not-approvable determination and the reasons for it. Cardima concludes that the data and information are sufficient to support a determination that there is a reasonable assurance that the device is safe and effective for its intended use in conformity with applicable statutory and regulatory requirements. Specifically, Cardima asserts that the PMA as amended should be approved because: the trial was well-controlled and the primary endpoint was met; and the procedure specified in the study protocol, amplitude reduction, is an acute procedural endpoint sufficient for a trained practitioner. Cardima believes that the results of the single arm pivotal trial are reliable and sufficient to provide reasonable assurance of effectiveness for the device as labeled, and that adequate directions for use can be developed for use of the device.

Thus, the Dispute Resolution Panel, to whom Cardima has appealed the not-approvable decision, will be charged with reviewing and making a recommendation to the CDRH Center Director as to the approvability of the PMA, that is:

* The REVELATION® Tx Microcatheter System is the subject of this PMA application. This system consists of a single use, steerable, multi-electrode ablation microcatheter (3.7F) with an atraumatic, flexible, non-electrically active tip, and a single use, deflectable NAVABLATOR® “hot tip” ablation catheter (8F) with an electrically active tip. Accessories to the system include Cardima’s support catheter, NAVIPORT® (cleared under K974683), the Tx SELECT™ Switchbox and the associated connecting cables. The Phase III study protocol specified that the NavAblator catheter was optionally available for ablation of the isthmus after first attempting to create a linear burn with the REVELATION Tx.

Does the PMA as amended provide valid scientific evidence that demonstrates a reasonable assurance of the safety and effectiveness of the REVELATION Tx Microcatheter Ablation System for its intended use in the specified patient population?

This Summary of Scientific Issues in Dispute is an overview. It is not intended to be a full and detailed statement of all such issues and arguments that will be presented at the panel meeting by ODE and the sponsor. Specifically, ODE is to present data and analyses to support its not-approvable determinations, and Cardima is to present its reasons for disputing the not-approvable determinations.

Les Weinstein
CDRH Ombudsman
March 21, 2007