

APPENDIX G. ITAR ISSUES

G.8.1. Overview

The Stanford University policy on openness in research is embraced by the HMI investigation as a sound policy:

"Stanford University is a nonprofit U.S. institution of higher education which conducts fundamental research in basic and applied science and engineering, which is widely and openly published and made available to the scientific and academic community. Stanford does not undertake classified work or research requiring national security controls. Based on the University's Openness in Research policy and federal laws prohibiting discrimination based on nationality, country of origin, ethnicity, gender, race, or religion, Stanford cannot accept any conditions of award which would restrict any members of the research group, including faculty, students and staff, from the ability to participate fully in all of the intellectually significant portions of the project."

However the Department of State ITAR rules apply to the HMI instrument development. These rules imply that if non-"US persons" are to have access to technical data about the implementation of the HMI instrument that that data must be exported and that a proper export license must be obtained. This requirement makes it impossible for Stanford students and research staff to participate in the HMI investigation without limitations.

ITAR does not control information which is of a general scientific nature such as the design principles of the proposed HMI instrument or of any use of the data for scientific research purposes. ITAR does control specific design and fabrication method information for implementing spacecraft and spacecraft components. Note *e.g.*:

Public Law 105-261, effective 15 March 1999 ITAR exempts the results of fundamental research (defined as *"basic and applied research in science and engineering where the resulting information is ordinarily published and shared broadly within the scientific community"*) from certain of its coverage. (22 CFR 120.11(a)(8)). ITAR also states that the definition of technical data *"does not include information concerning general scientific, mathematical or engineering principles commonly taught in schools, colleges and universities or information in the public domain"* (22 CFR 120.10(a)[(5)]). Indeed, ITAR further states that educational institutions, even if they may be otherwise providing defense goods or defense services, are not required to be "ITAR Registrants." However, unlike Commerce regulations, ITAR does not extend its exemption to items (technology, tools).

As of early April 2002 a revised ITAR regulation affecting university research went into effect. It would not appear on first reading that this new regulation has much effect for the HMI program. Therefore, the HMI program will for now adopt the following compromise. This compromise position will do minimum damage to the investigation given the primary objective of the Stanford research goals.

G.8.2. Nature of SDO-HMI Mission and Stanford Goals

SDO is a scientific research satellite designed to learn enough about the generation and development of solar variability to understand the impact of the variability on the environment and human systems and to lead to eventual prediction and/or mitigation of the impacts. This will require a dedicated satellite to be operated for a minimum of five and possibly ten or more years.

The SDO-HMI proposal is for a joint collaborative investigation by the Stanford-Lockheed Institute for Space Research. The project is an investigation which requires us jointly to develop, fabricate, test, calibrate, integrate, and operate after launch an instrument to observe the Sun and to analyze the resulting data and publish the results.

The Stanford involvement in the mission is centered on the development and use of the helioseismic and magnetic imager instrument and on collaborative studies using data obtained with the other SDO instruments and other sources of data.

The LMSAL involvement in the mission includes development and fabrication of the instrument as well as analysis of the data and participation in the scientific research goals of the project.

In addition to Stanford and Lockheed there are a number of U.S. and foreign Co-Investigator institutions. In particular a key part of the instrument, the CCD cameras, will be provided by a Co-Investigator in the U.K.

The construction of the instrument and integration onto the spacecraft will be activities lasting about five years. The operation, data analysis, and scientific studies will last six to eleven or more years. The analysis phase will be open to investigators from all countries. In particular non-U.S. Stanford students and staff will participate in data analysis.

G.8.3. Compromise Plan for HMI Program

G.8.3.1. Roles in HMI

For the HMI program, Stanford is the lead institution with a subcontract to LMSAL. Since the primary Stanford interest is with the resulting data, Stanford will forgo the opportunities for student involvement in the design and fabrication of the instrument. The principal roles of the two institutions are:

Stanford has oversight and responsibility for the project as a whole,

LMSAL will design and build the instrument,

Stanford and LMSAL personnel will collaboratively calibrate the HMI instrument.

Stanford will operate the instrument, distribute the data, and lead in analysis of data.

G.8.3.2. Accommodations

For this plan to succeed within the ITAR and Stanford policy constraints, each of Stanford, LMSAL, and NASA will need to make some accommodation:

G.8.3.2.1. LMSAL will obtain any required export and import licenses needed for the development and final delivery of the instrument and any export licenses needed to place the characteristics, calibration information, and operating instructions into the public domain.

G.8.3.2.2. Stanford will designate only "US persons" to have the oversight role for the LMSAL subcontract (where US persons are defined in 22CFR120.15). Stanford will maintain an office at LMSAL where all required documents can be maintained for review. Stanford will refrain from involving non-US persons in design and fabrication of the instrument. The Stanford role in the design, fabrication, and ground calibration of the instrument will be consistent with the Stanford Policy on Openness in Research (in particular section 4) which states (for this case) that a member of the research group who is not a U.S. Person for ITAR purposes will nevertheless be able to participate fully in all of the intellectually significant portions of the project.

G.8.3.2.3. Stanford and LMSAL personnel will jointly determine which information needs to be placed into the public domain to allow complete unrestricted use of the resulting instrument and data for scientific research purposes.

G.8.3.2.4. LMSAL will provide an office for Stanford's use and will provide badges, etc for convenient access to that office. LMSAL will prepare documentation of the instrument characteristics, calibration information, and operating instructions that are sufficient to meet the scientific goals of the mission and make these available in the public domain.

G.8.3.2.5. NASA will modify its contract terms to recognize that Stanford will pass through to LMSAL the responsibility for any required export licenses and information control for the project.

G.8.3.3. Future

At such time that the U.S. government confirms that scientific spacecraft should be exempt from ITAR controls then Stanford will reevaluate the restriction that students not be involved in the design, fabrication, and ground calibration of the instrument.

