

BUDGET JUSTIFICATION

A. SENIOR PERSONNEL

6.0 calendar month of salary per year is requested for PI Craig Kulesa. His base salary is \$58,131 per 12-month fiscal year.

0.5 summer month of salary per year is requested for Co-PI Christopher Walker. His base salary is \$92,582 per 9-month academic year.

1.0 calendar month of salary per year is requested for Servicing Mission Lead, Abram Young. His base salary is \$72,800 per 12-month fiscal year.

B. OTHER PERSONNEL

Partial funding for 2 years is requested for one graduate student (base salary \$30,175) engaged in Ph.D. thesis research under this project. One semester of academic year support, plus 50% summer salary is requested.

200 hours of undergraduate student research support is requested each year (base rate \$12/hour).

C. FRINGE BENEFITS

The following university-approved fringe benefit rates were applied to each labor category:

- Faculty/Appointed Personnel: 30.0%
- Graduate Students: 59.5% composed of:
 - 9.5% for health/dental/life insurance
 - 50.0% for tuition remission (exempt from indirect cost charges)
- Undergraduate Students: 3.5%

D. CAPITAL EQUIPMENT

None requested.

E. TRAVEL

Domestic

Funds are requested for one domestic conference (typically AAS, SPIE, or SCAR) for two personnel (typ. one graduate student and one mentor) for five days each year. Travel funds requested include roundtrip airfare (@ \$400/trip), lodging (@ \$100/night), and per diem (@ \$50/day). Conference registration fees are detailed under 'Other Direct Costs' in accordance with University of Arizona cost classification practices.

International

To support the annual servicing mission to Antarctica, travel funding support for per diem (@\$50 USD/day) and lodging (@\$100 USD/day) is requested for 2 personnel for 5 days in Christchurch, New Zealand.

F. OTHER DIRECT COSTS

Funds are requested in each year for research supplies and work-flow/data capture and telecommunications expenses required for the conduction of this investigation. These operational items represent the material costs of creating, replicating, archiving, distributing and presenting all project related data, documentation, reporting, and analysis that are directly related to this project. Such material costs include external disk drives, poster printer costs, and analysis and presentation software.

Funds are requested for minor electronics repairs to the HEAT telescope. Costing is estimated from the replacement costs of repairs during the first two years of operating HEAT at Ridge A, including replacement of instrument control computers, solid state storage, and power supplies.

Funds are requested in year 1 for possible refurbishment and/or repair of one of HEAT's two receiver systems at Virginia Diodes, Inc. The costs listed are averaged on actual costs incurred over the last two years of operation. Repair of the 810 GHz receiver is \$3800 and the 1460 GHz receiver is \$6000.

Funds are requested for two conference registrations per year, typically one student and one mentor.

Funds are requested for publication of findings in professional journals each year; estimated at 3 papers of 8 pages per year @ \$110/page (Astrophysical Journal).

Shipping charges for equipment to/from Antarctica (commercial surface shipping to Port Hueneme, CA or air freight to Christchurch, New Zealand) is estimated at \$3000 USD annually, based directly on the average shipping cost incurred during the last two years of operation.

G. INDIRECT COSTS

The university-mandated indirect cost rate of 51.5% was applied to all costs except capital equipment and 50.0% of the graduate student fringe benefit rate, which is for tuition remission and exempt from IDC.

*A cost inflation rate of 3.3% per year is applied to all eligible costs for year 2.