NEGOTIATION AGREEMENT

INSTITUTION: CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA 91125

The Facility and Administrative cost rates, Staff Benefit and Tuition Remission rates contained herein are for use on grants, contracts and/or other agreements issued or awarded to the California Institute of Technology by all Federal Agencies of the United States of America, in accordance with the cost principles and provisions mandated by the OMB Circular A-21. These rates shall be used for forward pricing and billing purposes at California Institute of Technology for the period(s) indicated under Section I. This rate agreement supersedes all previous rate agreements or determinations for fiscal year 1997.

SECTION I: RATES-TYPE: FIXED AND CARRY-FORWARD PROVISIONS (FIXED) AND PROVISIONAL (PROV)

<table>
<thead>
<tr>
<th>Effective Period</th>
<th>Rate</th>
<th>Base</th>
<th>Applicable To/Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>From</td>
<td>To</td>
<td>Base</td>
</tr>
<tr>
<td>FACILITIES AND ADMINISTRATIVE RATE (Indirect Cost):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed</td>
<td>10/1/96</td>
<td>9/30/97</td>
<td>57.45%</td>
</tr>
<tr>
<td>STAFF BENEFIT RATE:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed</td>
<td>10/1/96</td>
<td>9/30/97</td>
<td>33.34%</td>
</tr>
<tr>
<td>Prov</td>
<td>10/1/97</td>
<td>Until Amended</td>
<td>25.00%</td>
</tr>
<tr>
<td>TUITION REMISSION RATE:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prov</td>
<td>10/1/97</td>
<td>Until Amended</td>
<td>80.00%</td>
</tr>
</tbody>
</table>

DISTRIBUTION BASES:

(a) Modified Total Direct Cost (MTDC), as defined in OMB Circular A-21, consisting of all salaries and wages, fringe benefits, materials and supplies, services, travel and
Negotiation Agreement
Caltech
Page 2 of 4

subgrants and subcontracts up to the first $25,000 of each subgrant or subcontract (regardless of
the period covered by the subgrant or subcontract). Equipment (defined as having a useful life of
two or more years, and an acquisition cost of $500 or more per unit), capital expenditures,
charges for patient care and tuition remission, rental costs, scholarships, and fellowships as well
as the portion of each subgrant and subcontract in excess of $25,000 is excluded.

(b) Total direct salaries and wages of faculty, staff and graduate assistants including
vacation, holiday, and sick leave. (Leave consisting of accrued paid leave for salary and hourly
employees and actual paid leave for monthly employees and Graduate Assistants).

(c) Total direct salaries and wages of faculty, staff (excluded graduate assistants)
including vacation, holiday, and sick leave. (Leave consisting of accrued paid leave for salary
and hourly employees and actual paid leave for monthly employees.)

(d) Total direct salaries and wages of graduate assistants including vacation, holiday,
and sick leave. (Leave consisting of actual paid leave for Graduate Assistants).

SECTION II - GENERAL TERMS AND CONDITIONS

A. LIMITATIONS: Use of the rates set forth under Section I is subject to any statutory or
administrative limitations, and is applicable to a given grant, contract or other agreement only to
the extent that funds are available and consistent with any and all limitations of cost clauses or
provisions, if any, contained therein. Acceptance of the rates agreed to herein is predicated upon
all the following conditions: (1) that no costs other than those incurred by the grantee/contractor
were included in the indirect cost pool as finally accepted and that all such costs are legal
obligations of the grantee/contractor and allowable under governing cost principles; (2) that the
same costs that have been treated as indirect costs are not claimed as direct costs; (3) that similar
types of costs have been accorded consistent accounting treatment; and (4) that the information
provided by the contractor/grantee, which was used as the basis for the acceptance of the rates
agreed to herein and expressly relied upon by the Government in negotiating and accepting the
said rates, is not subsequently found to be materially incomplete or inaccurate.

B. ACCOUNTING CHANGES: The rates contained in Section I of this agreement are based
on the accounting system in effect at the time this agreement was negotiated. Changes to the
method(s) of accounting for costs which affects the amount of reimbursement resulting from the
use of these rates require the written approval of the authorized representative of the cognizant
negotiating agency for the Government prior to implementation of any such changes. Such
changes include but are not limited to changes in the charging of a particular type of cost from indirect to direct. Failure to obtain such approval may result in subsequent cost disallowances.

C. FIXED RATES AND CARRY-FORWARD PROVISIONS: The fixed rates and carry-forward provisions contained in Section I of this agreement are based on estimates of the costs for FY 1997. When actual costs for FY 1997 are determined, adjustments will be applied to the next subsequent rate negotiation to recognize the difference between the estimated costs used to establish the fixed rates and carry-forward provisions and the negotiated actual costs.

D. CARRY-FORWARDS: The Facility and Administrative rate set forth in Section I is inclusive of carry-forward amounts as follows:

1. The FY93 over-recovery of $452,510 established by Negotiation Agreement for FY93 for Final Rates and Carry-foward dated June 30, 1997 is liquidated in its entirety.

2. The FY94 over-recovery of $501,457 established by Negotiation Agreement for FY94 Final Rates and Carry-foward dated June 30, 1997 is liquidated in its entirety.

E. USE BY OTHER FEDERAL AGENCIES: The rates set forth in Section I hereof were negotiated in accordance with and under the authority set forth in OMB Circular A-21. Accordingly, such rates shall be applied to the extent provided in such circular to grants and contracts to which OMB Circular A-21 is applicable, subject to any limitations in part A of this section. Copies of this document may be provided by either party to other Federal agencies which have or intend to issue or award grants and contracts using these rates or to otherwise provide such agencies with documentary notice of this agreement and its terms and conditions.

F. SPECIAL REMARKS:

(1) The Government's agreement with the rates set forth in Section I hereof is not an acceptance of the California Institute of Technology's (Caltech) accounting system, cost classifications, allocation methodologies, or cost analysis studies, including the revisions Caltech submitted to the Government on 21 August 1996. Any reliance by the Government on cost data or methodologies submitted by Caltech is on a non-precedence setting basis and does not imply Government acceptance. The parties will continue to address any differences regarding the accounting system, cost classifications, allocation methodologies and cost analysis studies. The parties will attempt to resolve these differences before finalization of FY 1997 actual costs.

(2) The Institution has provided the Government a study of alternative costing methods for their Observatory facilities, including a specialized service facility cost rate(s) approach which establishes separate cost rate(s) from the Facilities and Administrative rate applicable to
Organized Research. The Government is reviewing the study and evaluating the appropriateness of the current costing methodology.

(3) The rates set contained in Section I of this agreement are in compliance with DFARS 231.303(1). The administrative indirect costs are below the 26 percent limitation imposed on these costs by OMB Circular A-21.

The undersigned hereby declare that the terms of this document have been completely read and are fully understood and voluntarily accepted.

The individuals executing this agreement are authorized to execute for and on behalf of the parties for whom they sign and do so as their free and voluntary act.

FOR THE INSTITUTE:

[Signature]

JOHN C. RICHARDS
Assistant Director
Federal Financial Accounting

7/17/97
Date

FOR THE GOVERNMENT:

[Signature]

DEBORAH K. RAFI
Contracting Officer

7/29/97
Date

for information concerning this agreement contact:
OFFICE OF NAVAL RESEARCH
DEBORAH K. RAFI
INDIRECT COSTS/ONR 242
800 N. QUINCY STREET
ARLINGTON, VA 22217
PHONE: (703) 696-5641
e-mail: rafid@onrhq.onr.navy.mil
INDIVIDUAL RATE COMPONENTS

Institution: CALIFORNIA INSTITUTE OF TECHNOLOGY
FY Covered by Rate: 1997

Location Rate is Applicable to: ORGANIZED RESEARCH (all except JPL)

Type of Rate: FIXED AND CARRY-FORWARD PROVISIONS

Negotiation Base: $76,316,000 MTDC

RATE COMPONENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ADMINISTRATIVE</td>
<td></td>
</tr>
<tr>
<td>A. GA</td>
<td>5.96%</td>
</tr>
<tr>
<td>B. DA</td>
<td>4.38%</td>
</tr>
<tr>
<td>C. SPONSORED RESEARCH ADMINISTRATION</td>
<td>0.34%</td>
</tr>
<tr>
<td>D. INDIRECT DEPARTMENT EXPENSE</td>
<td>10.39%</td>
</tr>
<tr>
<td>E. STUDENT SERVICES</td>
<td>0.40%</td>
</tr>
<tr>
<td>Subtotal</td>
<td>21.47%</td>
</tr>
<tr>
<td>2. DEPRECIATION/USE ALLOWANCE:</td>
<td></td>
</tr>
<tr>
<td>A. Building and Improvements</td>
<td>4.23%</td>
</tr>
<tr>
<td>B. Equipment</td>
<td>11.10%</td>
</tr>
<tr>
<td>3. O&amp;M</td>
<td>19.42%</td>
</tr>
<tr>
<td>4. LIBRARY</td>
<td>2.48%</td>
</tr>
<tr>
<td>5. CARRY-FORWARD</td>
<td>(1.25)%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>57.45%</td>
</tr>
</tbody>
</table>

* Represents a FY93 ($452,510) over-recovery and a FY94 ($501,457) over-recovery

FOR THE INSTITUTION:

JOHN C. RICHARDS
Assistant Director
Federal Financial Accounting

FOR THE GOVERNMENT:

DEBORAH K. RAFI
Contracting Officer

7/29/97

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