COSTS OF USING NEES@UTEXAS FIELD EQUIPMENT FOR NEES RELATED PROJECT

Last Modified: 25th January, 2007 (changes made after 10th August, 2005 are highlighted)

Note: All cost estimates are contingent on the National Science Foundation fully funding the proposed Maintenance and Operation budgets included in the NEES Consortium Ten-Year Operation proposal. If Maintenance and Operation funding is reduced, the user costs will be modified accordingly. **A 50% overhead charge needs be added on the budget for the University of Texas at Austin.**

Field Testing Protocol

Field testing will include one mobile shaker (Thumper, T-Rex, or Liquidator), the instrumentation van, and at least three University of Texas field personnel. Only University of Texas personnel may operate the field equipment. If more than one mobile shaker is required, additional UT field personnel may be required. NEES users will be required to pay for transportation/mobilization costs for the equipment and field personnel, per diem costs for the field personnel, and a rental car for the field personnel. If more than one mobile shaker is required, transportation/mobilization costs may be higher than listed below because there is only one NEES transportation tractor trailer. Tractor trailer transportation only is required for T-REX and Liquidator.

When estimating field testing time, NEES users should assume that the shakers operates 6 hours during an 8-hour field day. Per-diem and rental car costs will be paid for all field-testing days plus travel days to and from the field testing site. For mobilization, the equipment can be transported approximately 400 miles per day.

NEES users will be responsible for obtaining any required liability insurance and permits for testing at the proposed site. Site hazardous surveys and analyses are required at all shaking points to be performed by the user before any field vibration can be started.

Please refer to User Policies & Guidelines for details.

Available Instrumentation

The instrumentation available for use for NEES users includes:

- Twelve (12), 3-component, 1 Hz geophones
- Sixteen (16), 1-component (vertical), 1 Hz geophones, 5500 Ohm
- Twenty three (23), 1-component (vertical), 1 Hz geophones, 500 Ohm
- Twelve (12), 3-component, 10 Hz geophones
- Liquefaction sensor, which is an integrated sensor with a pore pressure transducer and multiple geophones (Note: Will make plans available so researcher can build. One or two sensors can be obtained on short term loan. If a liquefaction sensor is damaged or not retrieved, the estimated replacement cost for the NEES user is $2,500)

Details regarding the available instrumentation, data acquisition systems, and satellite internet connection can be found at the nees@UTexas website (nees.utexas.edu).

Costs

Transportation/mobilization costs:

- Thumper: $ 0.30/mile
- T-Rex (with tractor-trailer transport): $ 1.35/mile*
- Liquidator (with tractor-trailer transport): $ 1.35/mile*
- Instrumentation Van: $ 0.25/mile
- Maintenance Pick-up: $ 0.25/mile

Operation costs**:

- Thumper: $ 17.50/hr
- T-REX: $ 30.00/hr***
- Liquidator: $ 30.00/hr***
- Instrumentation Van: $ 2.00/hr + cost of satellite link ($0.70/MB)
- Instrumentation Trailer: $ 500/project

Rental car costs (required for all field days plus travel days to and from site):

- Approximately $ 50/day or $ 250/week

Per-diem cost (required for 3 persons for all field days plus travel days to and from site):

- Approximately $ 150/day/person

Note:

* This includes $0.35/mile for fuel and $1.00/mile for overweight permit. Tractor-Trailer with T-Rex or Liquidator on board will weight 107,000 lb or 112,000 lb, respectively. The permitted legal weight in most of states is 80,000. The cost of overweight permit depends on the total weight of the vehicle and is different from state to state. An average of $1.0 per mile should be planned for the over weight permit. Currently, Big-Rig is not able to transport Liquidator to California, Oregon, Washington, Oklahoma, and Wyoming states. Because of the limit of overweight permit and size restrictions, Big-Rig can not reach some test locations. Please contact Operations Manager for details.

** The operation costs of T-Rex and Liquidator include $25.00/hr for diesel fuel and $5.00/hr for hydraulic oil refill. Both T-Rex and Liquidator take about 10 gal/hr of diesel fuel, so a total of 60 gal will be needed daily. For field work longer than 2 days, users are responsible of refueling (diesel) T-Rex and Liquidator. A **field-fuel-supply-truck** is the preferred fueling method. In cases where a fuel truck can not be arranged, diesel fuel tanks may be used. However, caution is required to prevent the dust from the diesel fuel, and an enclosed transportation vehicle is required for the fuel transportation.

*** T-Rex and Liquidator are operated at a pressure as high as 3,000 psi with a force output as high as 60,000 lb and 20,000 lb, respectively. Components are subjected to high level of pressure and vibration for a long period of time. Equipment breaks down from time to time. The recovering time can take from one hour to one month, depending on the severity of the break-down and the readiness of the spare parts. Approximately 20% of the time in the field should be dedicated to maintenance. User(s) should plan for this and should cover the time and cost of these maintenance

operations. In the other words, a total of 6 working days should be planned for a project that requires 5 experiment days. Because equipment breaks down from time to time, additional 20% of estimated user traveling cost should be prepared in user budget for unforeseen equipment downtime. nees@UTexas can only cover equipment break-down induced travel costs of nees@UTexas personnel.

Example Budget Sheet for a NEES Related Project

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Note: Please add 50% overhead charge for the University of Texas at Austin

Last updated: January 25th, 2007

Project describsion:
A NEES related project using T-Rex and Instrumentaiton Van at a site 1000 miles from Austin for seimic prospecting study.
(700 miles + 300 miles from site to site (5 sites total))

Step1 Estimate of total time required for the testing

Estimated time required for testing	15	hours	include shaking + relocating shaker
Realistic estimatimation of required time	30	hours	* 2 for Try out + mistakes + DAQ malfunction + others
Total days of testing	**5**	**days**	6 hours of vibration each day
Travel	4	days	4 travel days to and from Austin + 4 * 0.5 days from site to site
weekends	1	days	UT personnel is required to take one day off for every 6 days
Days in the field	**10**	**days**	

Step 2: Estimate of cost of Equipment

T-Rex		
Highway	$2,700	= 1000 mile * 2 * $1.35 / mile ($1.00 overweight permit + $0.35 fuel)
Vibraton	$900	= Vibrator operating time * $30/hr
Instrumentation Van		
Highway	$500	= 1000 mile * 2 * $0.25 / mile
Recording equipment	$60	= Vibrator operating time * $ 2 /hr
Satellite equipment	$840	= 3 hr * $280/hr
Total Equipment Cost:	**$5,000**	**Account category: Material and supply**

Step 3: Estimate of cost of Travel and Expenses

Per diem for 3 people	$3,750	= 3 people * days in the field * $125 /day / person
Airline tickets	$500	= 1 person 1 trip
Rental car	$500	
Equipment breakdown induced travel*		20% of estimated user traveling cost should be prepared in user budget nees@Utexas can only cover equipment break-down induced travel costs of the nees@UTexas personnel.
Total Travel	$4,750	**Account category: Travel**

Step 4: Estimate of other cost

Material and supply	$500	
Fuel supply truck	$500	
Mobile phone service in the field		no charge for NEESR project
Site liability insurance**		
Total Others	**$1,000**	**Account category: Material and supply**

Step 5: Estimated total cost

Total direct cost	$10,750	
Indirect cost (50% overhead)	$5,375	**Account category: Overhead**
Total Cost	**$16,125**	

Notes:
* nees@UTexas vibrators operate with pressures up to 4,000psi, and can output a ground force as high as 60,000 lbs. Components of the vehicle are under high pressure and strong vibration for a long period of time. From time to time, component can fail and field tests will be interrupted. Equipment repairing time ranges from 30 minutes to up to one month at a time. There is a limited amount of budget at nees@UTexas to cover travel cost resulting from equipment breakdown and other incidents. However, this is for nees@UTexas personnel and equipment only. Users are suggested to add an additional 20% of their traveling cost for unexpected equipment breakdown and other incidents.
** Users are required to conduct site survey and purchase site liability insurance before field tests. The cost of the site liability insurance is estimated to be $2,000 per-project.
*** Field test can not be conducted over national holidays.