Sole Source Application and Determination Form

A sole source determination is not effective until the sole source application for determination has been posted on the Purchasing website for thirty (30) calendar days without protest and is subsequently approved in writing by the Vice President of Administration and Finance.

1. Name of Department: Earth and Environmental Science
   Contact Name: Alex Rinehart
   Phone: (575) 518-8278
   Email: alex.rinehart@nmt.edu

2. Name of Prospective Vendor: Psylotech
   Contact Name: Matthew Struve
   Phone: (847) 328-7100, x108
   Email: matt.struve@psylotech.com
   Estimated Cost: $39,000
   Duration (for Services or Professional Services – limited to four years): N/A. Equipment purchase with 1-year warranty

3. Purpose/need for purchase and detailed list of items of tangible property, services, or professional services:

As part of an existing contract with DOE Basic Energy Science (Geoscience), we need to conduct compressive loading tests with samples immersed in various fluids with simultaneous visual-band imaging (i.e., referenced photos) and temperature control. To meet the initial need, we purchased a Psylotech µTS load frame. This is a small (1.2 kN) load frame capable of static loading to near-dynamic rate (0.5 m/s) loading with a custom screw-drive for the high rates. As part of this system, we purchased a high resolution load cell, integration with Correlated Solutions, Inc. imaging systems, and a temperature control system consisting of a small windowed chamber, a blower and an inline heater that can control from 35 C to 300 C. The current heating system only works with air. The blower can work with a range of fluids. We have adapted the system to provide a constant humidity. The entire system is integrated via National Instruments DAQs programmed via LabView, with a Psylotech NI GUI and API.

Part of the test plan requires us to submerge the samples in glycerin at a constant temperature, without interfering with load frame and still allowing for imaging through the fluid during the testing. During the proposal process, the process of doing this was unclear.

4. Detailed explanation of criteria developed for this purchase:

    a. Integration into existing hardware, specifically precision machined and aligned pistons that enter into the bath.
    b. Integration of bath with existing heating hardware system.
    c. Low o-ring resistance during loading.
    d. Integration of bath controls with Psylotech NI-based data acquisition system.
    e. Compatibility with CSI imaging solutions, currently integrated with Psylotech DAQ.
    f. Precise temperature control across sample with steady, laminar flow and limited to no thermal convection.

5. Provide a detailed, sufficient explanation of the reasons, qualifications or unique capabilities of the prospective vendor that make that prospective vendor the one source for providing the items of tangible property, services, or professional services:

The primary reasons we request a sole source for the bath are that

    a. By purchasing from Psylotech, we ensure integration of the existing hardware with the bath.
    b. Psylotech will provide integrated DAQ and control system programming for the bath within the existing system.
    c. The bath is set up to allow CSI imaging solutions, including a window.
    d. Psylotech has found a solution for limiting convection during testing. Convection causes non-uniform temperatures of the liquid, impacting imaging negatively.
    e. The Psylotech solution leverages the existing systems hardware (heater, tubing, etc.), limiting costs.
    f. Machining and design costs of pistons, fittings, o-orings are optimized for the uTS system with the bath.

There are not general solutions for this available from other vendors, particularly with the integration into the existing control system software, and integrated imaging. If we were adding a small pressure vessel or triaxial cell, we would be able to approach other companies (GCTS, MTS, Psylotech, Parr, HiP, Instron) for solutions, or we could design and build one using internal expertise. These are hardware only systems, generally without integrated temperature control, that allow independent axial loading, confining pressure and pore-pressure to be applied. However, the vessels are generally opaque and still require the addition of a temperature control system, which would not be integrated with the existing uTS. This

The requirement of integrated temperature control, imaging, and loading at both the hardware and software levels complicates this, and limits solutions to Psylotech. Additionally, this purchase would

effectively extend our 1-year warranty on the uTS system by another year, a significant benefit for the project as the company continues to iterate on software with us for our specific test requirements.

6. Provide a detailed, sufficient explanation of how the items of tangible property, services, or professional services is/are unique and how this uniqueness is substantially related to the intended purpose of the department/grant:

See our response to (5). In addition, we want to emphasize that core to our work is the ability to test with both air (gasses) and liquids. Currently, we can only test with gas. A bath is required.

7. Please provide a narrative description department's due diligence in determining a basis for the procurement. Include:
    a. method used to research and review other available sources (i.e. list of potential vendors from Purchasing, internet, state pricing agreements, purchasing cooperatives)

    During proposal development, we identified Psylotech as the preferred solution for a small, universal load frame. Psylotech solutions provide integration with CSI, one of the primary scientific imaging solutions companies, and their load frames are designed specifically for high resolution imaging. Additionally, the direct-drive screw-based loading system was preferred to other solutions. We need to test at very low rates and very high rates. Screw driven systems have the benefit of 'locking' the system in place for the very low rate loading (static). Other screw driven systems previously used did not have adequate software control capability (programming), high rate loading, or the high resolution load cell. Additoinally, other screw driven systems previously used by the PI had too much 'lash' (hysteresis when switching from loading to unloading) to be appropriate for our application.

    Hydraulic systems were also considered. These systems were not selected because they were more expensive (generally by a factor of 2 to 5), and required additional pumps. We needed a solution that could stand-alone in a small laboratory with limited maintenance.

    I am in regular contact with MTS, Instron and GCTS about their products, and have helped price several load frames with triaxial cells at various capacities over the last 8 years. I have also used several other screw-driven frames by manufacturers such as ….

    This led to the initial selection of the uTS frame manufactured by Psylotech.

    Once Psylotech was selected for the load frame, it limits integration of other vendors of accessories for universal load testing systems with it, if there is the requirement of both hardware and software integration. Additionally, the limitation of convection within the bath is a recognized issue but does not have hardware solutions, which the Psylotech bath does. Again, there *are* other applications such as a triaxial cell or acoustic emission-

enabled pistons or ultrasonic pistons or EM-enabled pistons that there would be several vendors to consider. However, this is an unconventional

b. list of vendors contacted, the date and method of contact (i.e. email, phone call)

   Matthrew Struve, Psylotech, via email. Initial request for information was March 4, 2026, with an updated quote sent April 30 following a zoom call that same day to refine the initial quote.

   I have not contacted other vendors about this specific application. The integration of the existing system with the bath precludes other vendors for this specific application to a large extent.

c. documentation explaining why:
   i. those vendors cannot provide the required items of tangible property, services, or professional services
   ii. other similar items of tangible property, services, or professional services cannot meet the intended purpose of department/grant.

      I have been working with MTS, GCTS, Instron, New England Research and Core Labs on other applications with equipment that can be mounted into load frames (described above) for 16 years; they do not make this equipment and do not specialize in deformation and flow visualization, which Psylotech does. If we worked with a custom systems vendor, we would need to (a) provide proprietary drawings from Psylotech to them for hardware integration, (b) iterate on mounting hardware for the existing frame, (c) iterate through multiple visualization scenarios, (d) purchase a new fluid handler compatible with their system, (e) pay for integration and tuning of the heating system and the control system on the Psylotech data acquisition system via proprietary code.

      Psylotech has already designed, prototyped, iterated on and built a working liquid bath able to also allow deformation visualization that integrated into their Psylotech uTS 1.6 kN load frame series. This is a specialized flow cell design for an existing system with complex requirements.

I certify I have performed thorough and diligent research and analysis to determine that Psylotech is the only source capable of providing the required liquid bath with loading, temperature control and visualization capabilities. I understand that violations of the New Mexico Procurement Code (Chapter 13, Article 1 NMSA 1978) can carry severe penalties. I affirm that the information provided in this Sole Source Determination is true and accurate to the best of my knowledge and belief.

Name, Title: AdobeSign/Date



Alex J. Rinehart, Associate Professor of Hydrology

2 Nov 2026

Review: Purchasing Services (Name, Title): AdobeSign/Date 11.13.26

Meradeth Montoya, Associate Director of Purchasing

Meradeth Montoya

Website Posting Date: 11/14/2026

Posting Expiration Date: 12/14/2026

Protested (Yes/No):

Approval: Delilah A. Walsh AdobeSign/Date 13-Nov-2026

Vice President of Administration and Finance



Version: July 2025

Psylotech, Inc.
1616 Payne St.
Evanston, IL 60201
847-328-7100

July 6, 2026

New Mexico Tech
Purchasing Services Office
801 Leroy Place, Brown Hall, Rm 100
Socorro, NM 87801

cc: Prof. Alex Rinehart

To Whom It May Concern:

Psylotech is the only vendor for the fluid bath requested by Prof. Alex Rinehart. This sub-system is purpose-built for Psylotech's µTS, a miniature universal load frame. The integrated system enables combined submersed + mechanical materials testing.

The proposed Psylotech Bath System quoted on June 26, 2026, is designed specifically for the 100 Series 1.6kN µTS currently on campus. The fluid bath is made of extremely corrosion resistant metals. We are the only vendor that has already designed, installed, and supported this sub-system for Psylotech systems.

Psylotech was founded in 2006. We have been supplying micro-mechanical testing frames since 2009, integrating fluid baths onto our frames since January, 2020. We are based in Evanston, IL.

Sincerely,

Alex Arzoumanidis, Ph.D.
President

Sole Source Psylotech

Final Audit Report 2026-11-13

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