
Date: 1st February, 2013

National Center for Research on Earthquake Engineering
200 Sec. 3, Hsinhai Road
Taipei City,
Taiwan

To: Professor KC Chang, NCREE Director

Re: Ensuring uptime and long-term health of the NCREE Structural and Earthquake Test lab

Dear Professor Chang,

Firstly, thank you for your courtesy during my visit to NCREE in October. I found it extremely useful to see your facility first hand and to spend time discussing the various issues with your staff. Following my return to MTS we have continued to follow the issues and work closely with Sinodynamics both to understand the fundamental causes of the problems while also devising an approach to restore the lab to reliable, optimal performance and developing a long term maintenance plan. We have held several meetings and discussed possible approaches.

As you know NCREE and MTS have a long history together innovating many of the first-of-a-kind tests and developing novel control and testing approaches. Clearly it is in both organizations best interests that NCREE continues to be enabled by advanced state of the art hardware, controls, and software systems. As you well know procuring the best equipment alone is not a complete solution, it must be coupled with a team of well qualified and experienced users as well as a comprehensive support and service plan to ensure the lab runs well day-to-day, ensuring the proper response when issues arise. With a lab of your size and complexity it is inevitable that sporadic failures will occur; what we can do is take preventive measures through routine maintenance to reduce the risk of failures in terms of frequency and severity – and also have a plan for appropriate response when a failure occurs.

MTS is proud to be a partner with NCREE as one of the most prestigious testing labs in Asia. We have a long history together. Both Sinodynamics and MTS have strived to provide continued service and support over the years. As the equipment in your lab ages and the number of tests you need to run increases it presents a huge challenge to all three parties to find a way to ensure high uptime of the lab going forward. We believe it is time to develop a more comprehensive plan and approach to support NCREE into the future. There are service models that we have worked successfully with other large institutions around the globe, however this requires a commitment from all sides to enter into a formal service plan with clear expectations on all parties. In this way we can provide the recommended preventive services, while also developing a strategy for maximum response and minimum down time due to equipment failures.

The recent heat exchanger failure, and list of other issues reported to MTS, namely problems with control of the MATS system, issues preventing continuous operation of all HPU units – especially the diesel engine pumps, failure of the seismic table to return to park upon interlock, and hardware failures in various FlexTest controllers; all point to the need for a systematic approach to total lab maintenance. A report of the heat exchanger failure has been delivered to your team via Sinodynamics. We have provided several recommendations for the lab related to confirmation of the other heat exchanger installations as well as conditioning of cooling water and ongoing monitoring of the central hydraulic system.

Regarding the list of open issues, we have theories regarding each issue and some of the solutions are more clear than others. As you will appreciate after the many years of collaboration with NCREE, the experienced project managers and engineers involved in structural and seismic testing are familiar with your systems and have identified issues over the years that need to be addressed. In our opinion there are software, mechanical, hydraulic, and electronic issues to be rectified. We propose that the most optimal initial approach is to dispatch two highly qualified personnel already experienced with NCREE to your site for a week. They can diagnose and rectify several of the software and hydromechanical issues. This diagnostic visit will further identify some of the key areas where corrective and preventive actions are necessary. This will be directly supportive of defining the scope of a master service plan.

It is a given that a collaborative approach is necessary with a long term commitment from NCREE to address the known issues existing in the lab and engage in a long term maintenance program. As mentioned above we first recommend a diagnostic visit from MTS, which we will offer at no cost to NCREE. During this visit we can help oversee some of the corrective actions to known issues, however we need NCREE to procure the necessary parts prior to the visit. Details can be discussed with Sinodynamics. These parts include replacement poppet valves for each of the diesel pump manifolds, replacement relief valves for return line back pressure, and seal kits for the supercharger pressure and return lines. On-site work will also include debugging and updating software on the MATS system. Additional maintenance recommendations will result from the visit upon evaluation and inspection of the various systems.

We desire to hear from NCREE your opinions regarding this topic and interest in developing a long term service plan. You shared with me that you intend to appoint your own committee to evaluate and identify plans to ensure minimal down time of the test lab. We are interested to hear your findings. I believe together NCREE, Sinodynamics and MTS can develop an overall plan to achieve the reliable operation of your lab at the levels of performance expected over the long run. We look forward to partnering with you in this effort.

As a next step we will ask Sinodynamics to have further detailed discussion with you and your team. We request that you consider the merits of a diagnostic visit from the MTS team and evaluate timing. Certainly we will need to coordinate schedules based on both sides availability. Also we propose to schedule a video conference call with you to discuss the broader topic and to discuss specifics of the proposed MTS visit.



Please feel free to contact me directly in this matter or any other. I look forward to hearing from you.

Faithfully Yours,

A handwritten signature in black ink, appearing to read "Darragh Murphy".

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