
Adopted: May 24, 2005

**ACADEMIC SENATE
of
CALIFORNIA POLYTECHNIC STATE UNIVERSITY
San Luis Obispo, CA**

AS-633-05

**RESOLUTION ON
*PROPOSAL FOR CAL POLYNATIONAL POOL
INDUSTRY RESEARCH CENTER***

1 RESOLVED: That the Academic Senate of Cal Poly recommend to President Baker that the
2 attached *Proposal/or Cal Poly National Pool Industry Research Center* be
3 approved.

Proposed by: Damian Kachlakev, Civil and Environmental
Engineering Department
Date: March 24, 2005

State of California
Memorandum



To: David Hannings, Chair
Academic Senate

Date: March 24, 2005

From: Robert C. Detweiler
Interim Provost and Vice President
for Academic Affairs

Copies: Peter Y. Lee
Susan Opava
Damian Kachlakev

**Subject: Request for Academic Senate Review of the
Proposal for the Establishment of the Cal Poly
National Pool Industry Research Center**

Attached is a copy of a proposal to establish the Cal Poly National Pool Industry Research Center. In accordance with campus Administrative Bulletin 87-3 (Guidelines for the Establishment of Centers and Institutes), this proposal received conceptual approval by the Academic Deans' Council at its meeting on January 24, 2005. I would now appreciate the Academic Senate review this proposal, if possible, prior to the close of Spring Quarter 2005. I recognize this is a late request to have this reviewed by the end of Spring Quarter, but would like to discuss it with you. Please feel free to contact Dr. Damian Kachlakev of the Civil and Environmental Engineering Department, and author of the proposal, should you have any questions or would like him to make a presentation to the Academic Senate. No State funding has been requested, or needed, since the proposed Center has already received \$1 million worth of donations to create the center and for five years of funding.

Thank you, and if you have any questions, please do not hesitate to contact my office.

Enclosure

PROPOSAL

CAL POLY NATIONAL POOL INDUSTRY RESEARCH CENTER

*Dr. Damian I Kachlakev
Civil and Environmental Engineering
California Polytechnic State University*

POOL INDUSTRY NEEDS FOR RESEARCH AND INNOVATION

The establishment of the **Cal Poly National Pool Industry Research Center** is one of the most important projects in the history of the modern swimming pool industry. It is important to understand that this industry is an infant as compared to many of the other trades such as roofing and house framing which have been around for 1000's of years. The swimming pool industry came into real existence in the 1940's and 50's.

From its beginning, the swimming pool industry has been segmented with manufacturers, distributors and suppliers, pool builder companies and pool service companies. Currently, there are at least seven different pool & spa associations in the United States, four of which have substantial membership: National Spa and Pool Institute (NSPI), National Plasterers Council (NPC), Independent Pool & Spa Service Association (IPSSA), and United Pool Association (UPA).

COLLABORATION BETWEEN NPC AND CAL POLY

The current research being conducted by Dr. Damian KacWakev and Dr. Nirupam Pal on etching deterioration in swimming pools has been a topic debated for over eighteen years. During its strategic planning process in 2003, the National Plasters Council (NPC) adopted a plan to make industry research one of its primary focuses. The NPC has realized the importance to find solutions to pool surface related issues by scientific, methodological and professional approach and long-term dedication to industry-specific research. As a result the NPC formed a research committee to generate, manage and guide the industry research. The committee includes members from the plastering industry, material manufacturers, chemical companies and pool service industry.

After an extensive search of research entities, including universities and research centers nationwide, California Polytechnic State University in San Luis Obispo, California was selected for its outstanding program, faculty and research programs. NPC's research committee has worked with the Cal Poly professors to define a research protocol that supports sound, factual, realistic and application-based solutions for the pool industry. The research efforts are led by two Cal Poly professors and a petrographer. Dr. Damian Kachlakev from the Civil and Environmental Engineering is the NPC Research Program Director. Dr. Nirupam Pal from the same department is Research Manager and Co-Principal Investigator for the NPC Research Program.

GOALS OF THE NATIONAL POOL INDUSTRY RESEARCH CENTER (NPIRC)

When establishing the goals and assessing the impact of the Center on the national pool industry, it is important to note that similar test facility does not currently exist in United States. The long-term goals of the research center include:

- Complete service, analysis, research and development, related to the swimming pool industry, spas, and other recreational water facilities;
- Provide qualitative knowledge to assist manufacturers, builders, service agents and customers of the recreational water industry;
- Assessment and evaluations of submerged cementitious products in recreational water facilities (swimming pools);
- Research and development of new materials for the pool industry;
- Assessment and research of various chemicals with varying balances affecting the carbonate system of the aqueous solution;
- Development of new and improvement of existing pool cleaning systems;
- Commercialization of new developed products and techniques;
- Any other problems as they arise and which research, understanding and solution becomes priority to the pool industry.

IMPORTANCE OF THE NPIRC FOR THE INDUSTRY AND CAL POLY

Two factors must be considered when evaluating the importance of the NPIRC. First, is that currently there is no other institute, research center or commercial firm specializing in this research. Second, it's important to understand the potential longevity of the NPIRC at Cal Poly.

Currently, the swimming pool industry is a twelve billion dollar a year business in the USA. It is estimated that only 7% of all US homes have swimming pools, 61 million have the economic capacity and available backyard space with no pool and 3 million have Above Ground Pools that could be converted to In Ground Pools. With these facts, the swimming pool trade will continue to be a major trade through the next century.

In summary, the Cal Poly NPIRC is the first ever research center of its kind. Under the leadership of the National Plasterers Council, funding through financial contributions, donated labor and materials have made this dream a reality. Additionally, the NPIRC has included the other major association's representation, in addition to NPC, on the Center Advisory Board. The NPSI, UPS, and IPSSA all have representation in the NPC Research Foundation and Research Committee, and have been involved in the construction of the center. This represents over 18,000 member companies throughout the United States.

FUNDING STRATEGIES FOR THE NPIRC

The collaboration between NPC and Cal Poly started during the summer of the 2003. Cal Poly is the only research institution where the NPC conducts and intends to conduct

studies. Summary of the funded current activities and pending grants is provided in Tables 1 and 2.

Table I: Funded Projects

YEAR	PROJECT TITLE	AMOUNT
2003	Construction of Test Pools, Modesto, CA	50,000
2003-2004	Etching Deterioration of Swimming Pools- Phase I	\$141,000
2004	Construction of NPCCPRC- Cal Poly Campus	\$850,000
2004-2005	Etching Deterioration of Swimming Pools- Phase 2	\$181,071

Table2: Pending Grants and Contracts

YEAR	PROJECT TITLE	AMOUNT
2005-2009	Industry Driven Research	Guaranteed \$150,000 to \$200,000 per year provided by the NPC
2004-2006	Performance of White Cement Mixes in Swimming Pools- Portland Cement Association (PCA)	\$150,000

As outlined in the above tables, the pool industry already spent \$1,222,000 just over the last two years Since collaborating with Cal Poly's researchers. Of that amount \$322,000 is in project funding through the Cal Poly Foundation and \$900,000 went for development of new infrastructure (construction of the NPIRC). The construction of the NPIRC was completed during the summer of 2004 and is now a fully operational facility. The commitment to support the Center just from the NPC Inc. for the next five years is estimated between \$750,000 to \$1,000,000 total.

The NPIRC will be self-supporting from the very beginning. The major portion of funding for the research center will be provided by the NPC through their Foundation. The research amount will be determined each year by joint Cal Poly-NPC Research Committee. The NPC commits to providing at least \$150,000 per academic year to the NPIRC.

In order to show its long-term commitment to Cal Poly's NPIRC, in September 2004 NPC started a Research Endowment Fund. The Fund was started with \$90,000 with the intention to grow to \$3,000,000. Thus, the interest will generate enough money to provide annual funding to the center close to \$300,000.

Table 3 shows the administrative budget of the Center. Based on the current research grants of about \$150,000 per year in direct funds, the 35 % indirect cost and minimum of

25 % of the indirect cost returned to the Center, the administrative budget is estimated at least \$13,000 per year. This is a conservative estimate, which may increase to \$30,000 or even \$40,000 per year as the amount of the research grants increases.

Table 3: NPIRC Projected Administrative Budget

REVENUE	AMOUNT				
	Year 1	Year 2	Year 3	Year 4	Year 5
External Funding (based on \$150,000 per year)	\$13,125	\$13,125	\$13,125	\$13,125	\$13,125
Profit from Workshops	\$1,000	\$2,500	\$3,000	\$5,000	\$7,000
Center "Start-up Funds"	\$15,000	\$15,000	\$15,000		
Research Endowment Fund				\$18,000	\$18,000
TOTAL REVENUE	\$29,125	\$30,625	\$31,125	\$36,125	\$38,125
EXPENSES	AMOUNT				
Travel Conferences and Workshops	\$6,000	\$7,000	\$8,000	\$8,000	\$9,000
Workshops Organization	\$4,000	\$4,000	\$4,500	\$5,500	\$5,500
Center Director Release Time	\$6,700	\$6,700	\$6,700	\$8,000	\$8,500
Staff/Student Office Personnel	\$4,800	\$4,800	\$5,000	\$5,000	\$5,500
Long Distance / Communications	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Office Supplies/Small Equipment	\$4,000	\$4,000	\$3,000	\$4,000	\$4,000
Publications, newsletter, etc.	\$1,500	\$1,750	\$1,750	\$2,000	\$2,000
TOTAL EXPENSES	\$28,000	\$29,250	\$29,950	\$33,500	\$35,500
TOTAL BALANCE	\$1,125	\$1,375	\$1,175	\$2,625	\$2,625

BYLAWS

MISSION

To study various problems of the national pool industry in all its components and develop industry-oriented solutions of the problems. To explore, develop and implement new materials, cleaning systems, and advanced techniques for construction, maintenance and rehabilitation of swimming pools.

STRUCTURE OF THE NPIRC

The administrative hierarchy that governs the NPIRC is briefly outlined below. It is intended that the internal governance of the Research Center will generally be free of administrative hierarchy. However, some administrative structure must be maintained, therefore the following should be implemented.

1. The membership of the Center shall elect a Director, based on the recommendation of the Advisory Board.
2. The Director shall appoint an Associate Director.
3. Advisory Board shall be established and will consist of no more than ten (10) individuals from the Industry, Government and Academia with appropriate expertise and credentials.
4. Consultants and Collaborators will be sought to provide guidance in various aspects associated with the Center goals.

ACTIVITIES

The following main activities shall be carried out by the Center:

1. Management, coordination and performance of research on topics (protocols) determined on a yearly basis by the membership, the Advisory Board and the NPC Research Committee. Research topics will vary from one year to another and will be primarily dictated by the pool industry needs.
2. The Center shall seek funding opportunities and research grants from State, Federal and national and international organizations and the pool industry as a whole.
3. The Center shall serve as an entity for consulting and advising the pool industry, the materials manufacturers, the community and all other interested parties on subjects related to the research conducted by the Center.
4. The Center shall file patents for developments and innovations.
5. Consistent with the provisions of the University's Intellectual Property Policy, the Center shall retain, on behalf of its members, all rights to its findings, developments and innovations, including, but not limited to, products for commercialization purposes. Through the University/Cal Poly Foundation, efforts will be made to grant rights and licenses to interested parties and organizations on an individual basis.
6. Members shall be encouraged to take advantage of the state-of-the-art research utilizing it into various classes taught by the members at Cal Poly or elsewhere.
7. The Center shall collaborate with appropriate Department(s) to establish a multidisciplinary Master of Science degree program in cementitious materials.

NATIONAL POOL INDUSTRY RESEARCH CENTER (NPIRC)

California Polytechnic State University- San Luis Obispo

Introduction

- Annual Pool Industry Revenue-\$12 -16 billion
 - Currently only 7% of household have pools;
 - 61 million homes have the economic capacity and space to add pool.
- The National Pool Industry Professional Organizations
 - National Plasters Council (NPC);
 - Independent Pool and Spa Service Association (IPSSA);
 - United Pool Association (UPA);
 - National Spa and Pool Institute (NSPI);
 - Together they represent over 18,000 member companies in the US.

Pool Industry Problems

- Deterioration of pool plastering surfaces;
 - Decades old problem know as "spot etching"
- Lack of standardization, problems with material & Chemical selection and formal training
- Lack of scientific approach;
 - Studies by builders, service agents, plasters with pseudo-scientific results;
 - Mixed and contradicting results
- Legal problems of the industry;
 - Polarization in the industry, technical debates and lawsuits for millions of dollars.

Objectives of the NPIRC

- Serve as an R&D institution for the US pool industry;
 - Industry-driven research topics
- Provide knowledge to builders, manufacturers, service companies;
 - Work shops, seminars, publications
- Develop new (improve existina) materials and cleaning systems for the pool industry;
- Commercialization of new developments.

Funded Projects 2003-2005

YEAR	PROJECT TITLE	AMOUNT
2003	Construction of Test Pools, CA
2003-2004	Etching Deterioration of Swimming Pools- Phase 1	\$141,....
2004	Construction of NPIRC Re-Cal Poly Campus
2004-2005	Etching Deterioration of Swimming Pools- Phase 2	\$181,871

Secured Future Funding

- 2005-2009: NPC Industry Driven Research Guaranteed \$150,000 to \$200,000 per year;
 - Commitment of \$750,000 to \$1,000,000
 - Funding Organization: NPC Research Foundation
- Research Endowment Fund
 - Goal: \$3,000,000
 - Started: August 2004 with \$90,000
 - Current Funds (Dec. 2004): EXCEEDS \$1,000,000

Expected Future Funding

- Portland Cement Association: \$150,000
- Clear Water Tech- SLO: \$15,000
- Bonder, Phoenix, AZ: \$15,000
- Universal, White Cement Company, Inc
- Pool Equipment Manufacturers
- Manufacturers of Alternative Pool Surfaces (Fiberglass, tile, marble, etc.)
- Manufacturers of Pool Cleaning Solutions and Equipment

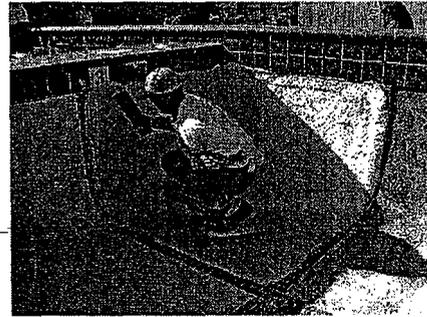
Administrative BUdget

	\$ AMOUNT PER YEAR				
Year	1	2	3	4	5
Revenue	29125	30625	31125	36125	38125
Expenses	28000	29250	29250	33500	35500
Balance	1125	1375	1175	2625	2625

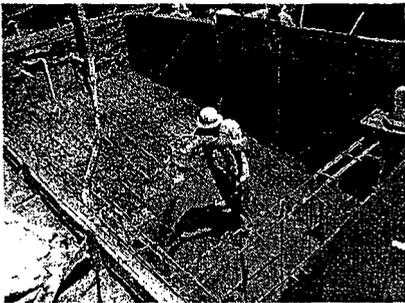
NPIRC Importance to Cal Poly

- There is no other research facility (public or private) in the US specializing in pool research;
- Longevity of the Center
 - It is expected that the pool industry will grow
- All major pool industry professional organizations are represented in the
 - Unification of the industry

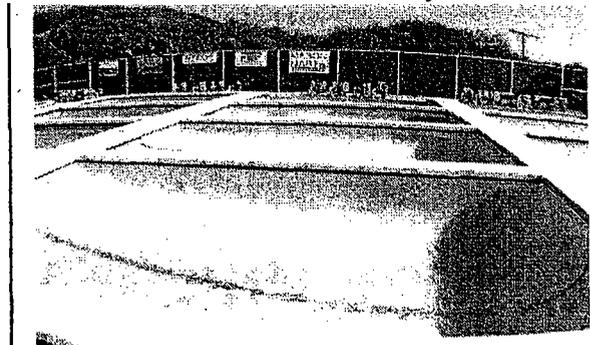
NPIRC Modesto, CA Pools



Construction Summer 2005



NPIRC Cal Poly



State of California
Memorandum

To: David Hannings
Chair, Academic Senate

Date: June 10, 2005


From: Warren J. Baker
President

Copies: R. Detweiler, P. Lee,
D. Kachlakev, A. Chatziioanou,
S. Opava

Subject: Response to Academic Senate Resolution AS-633-05
Resolution on Proposal for Cal Poly National Pool Industry Research Center

Based upon the above-subject Resolution and the positive endorsement by the Academic Deans' Council at its February 14, 2005, meeting, as well as the recommendation of Provost Robert Detweiler, I am pleased to approve the establishment of the Cal Poly National Pool Industry Research Center. It is my understanding that no formal start-up funding is needed for the Center in that it has already been the recipient of significant grant funding to support its research and development activities.