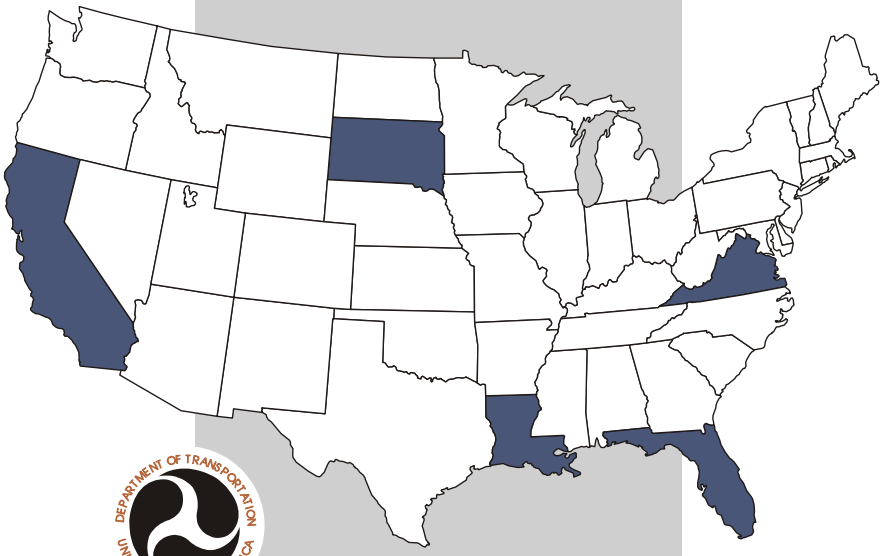
FINAL REPORT
VTRC 05-R19

VIRGINIA'S TRANSPORTATION RESEARCH PEER EXCHANGE

August 29 - September 1, 2004



Federal Highway Administration

VDOT
Virginia Department of Transportation

Wesley S. C. Lum, P.E., Panel Chair
Lorenzo J. Casanova, P.E.
David L. Huft
Richard C. Long
Harold "Skip" Paul, P.E.

VIRGINIA TRANSPORTATION RESEARCH COUNCIL

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Virginia Transportation Research Council
(A Cooperative Organization Sponsored Jointly by the
Virginia Department of Transportation and
the University of Virginia)

Charlottesville, Virginia

October 2004
VTRC 05-R19

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VIRGINIA PEER EXCHANGE TEAM

Panel

Wesley S. C. Lum, P.E., Chief, National Liaison, Division of Research and Innovation, California Department of Transportation (Panel Chair)
Lorenzo J. Casanova, P.E., Programs and Technology Engineer, Federal Highway Administration–Virginia Division
David L. Huft, Program Manager of Research, South Dakota Department of Transportation
Richard C. Long, Director of Research, Florida Department of Transportation
Harold "Skip" Paul, P.E., Associate Director of Research, Louisiana Transportation Research Center

VTRC Leadership Team

Gary R. Allen, Ph.D., Chief of Technology, Research & Innovation, VDOT
Wayne S. Ferguson, Associate Director for Safety, Planning & Legal, VTRC
Jose P. Gomez, Ph.D., P.E., Associate Director for Structures, Pavements & Asset Management, VTRC
Maureen L. Hammer, Director, Knowledge Management & Technology Transfer, VTRC
William E. Kelsh, Associate Director for Administration, VTRC
Amy A. O'Leary, Ph.D., Associate Director for Environment & Business Practices, VTRC
Michael A. Perfater, Associate Director for System Operations & Traffic Engineering, VTRC
Michael M. Sprinkel, P.E., Associate Director for Materials, VTRC

Other Participants

Thomas A. Dingus, Ph.D., Director, Virginia Tech Transportation Institute
Lester A. Hoel, Eng.D., P.E.; L.A. Lacy Distinguished Professor of Engineering, University of Virginia; Faculty Research Scientist, VTRC
Charles L. Miller, P.E., Consultant
Michael C. Brown, Ph.D., P.E., Research Scientist, VTRC (Report writer)
Ilona O. Kastenhofer, Senior Research Scientist, VTRC (Report writer)

Observers

William H. Bushman, P.E., Research Scientist, VTRC
Katherine S. Clark, Project Manager, Knowledge Management, VTRC
Michael J. Demetsky, Ph.D., P.E.; Chair, Department of Civil Engineering, University of Virginia; Faculty Research Scientist, VTRC
David C. McClenahan, Project Manager, Knowledge Management, VTRC
Russell A. Neyman, Training Instruction Manager, Knowledge Management, VTRC
Ann M. Overton, Public Affairs Coordinator, VTRC
Gene Tey Shin, Ph.D., Project Manager, Knowledge Management, VTRC

INTRODUCTION

To be eligible for managing State Planning and Research (SP&R) funds, a state must agree to a peer review of its management process with regard to Research, Development, and Technology Transfer (RD&T^2) efforts. Specifically, the federal regulation regarding this requirement states:

> (b) Each State shall conduct peer reviews of its RD&T program and should participate in the review of other States' programs on a periodic basis. To assist peer reviewers in completing a quality and performance effectiveness review, the State shall disclose to them information and documentation required to be collected and maintained under this subpart. Travel and other costs associated with peer reviews of the State's program may be identified as a line item in the State work program and will be eligible for 100 percent Federal funding. At least two members of the peer review team shall be selected from the FHWA list of qualified peer reviewers. The peer review teams shall provide a written report of its findings to the State. The State shall forward a copy of the report to the FHWA Division Administrator with a written response to the peer review findings (23 CFR 420, Subpart B).

The Federal Highway Administration (FHWA) interpreted the required peer reviews to be an exchange of information regarding the various practices a state uses to manage its RD&T^2 programs. The intent of the regulation was to strengthen weak programs and enhance strong programs with a sharing of ideas.

The peer exchange panels are typically composed of state research managers and FHWA, university, or industry personnel, at least two of whom must have received training on peer exchange procedures and guidelines provided by FHWA and be listed by FHWA as a qualified peer exchange team member.

Peer exchanges are generally conducted in an informal atmosphere and last from two to four days. Techniques used to gather the information needed by the peer exchange panel include discussion of individual state practices, informal interviews of users of the RD&T^2 products, and brainstorming sessions on the focus areas of interest to the host state. Open-ended questions are used during the interview sessions to solicit the strengths and weaknesses of the program from the user's perspective.

From August 29 through September 1, 2004, the Virginia Transportation Research Council (VTRC) hosted a peer review of its research program. This document is the report of that effort.

SELECTION OF PEER EXCHANGE PANEL

As part of the charge to his staff for the new year, in January 2004, Virginia Department of Transportation (VDOT) Commissioner Philip A. Shucet asked Chief of Technology, Research & Innovation Gary R. Allen to develop a "First Place Strategy for Research" (see Appendix A). The strategy was to be based on the quality of Virginia's contribution to research on a national level. As Commissioner Shucet elaborated: "The first place strategy is not about direct competition; it is about the best use of public resources."

To build upon the foundation of excellence developed during VTRC's first 50 years, the First Place Strategy for Research will comprise a series of definitive actions that will take VTRC to increased levels of service to VDOT and the citizens of the Commonwealth through research, technology, innovation, knowledge deployment, and research implementation. These actions will also enhance the knowledge level of transportation innovation for the nation and the international transportation community.

As a key step in this effort, Dr. Allen asked selected national transportation leaders to participate in a peer exchange effort to evaluate the VTRC research program. The following persons were asked to be a member of the peer exchange panel:

- *Wesley S. C. Lum, P.E.,* Chief, National Liaison, Division of Research and Innovation, California Department of Transportation (Panel Chair). Mr. Lum serves as Chairman of the AASHTO National Research Advisory Committee and the Vice Chairman of the AASHTO Standing Committee on Research.

- *Lorenzo J. Casanova, P.E.,* Programs and Technology Engineer, FHWA's Virginia Division. In this capacity, Mr. Casanova also serves as the FHWA's liaison for research activities within VDOT.

- *David L. Huft,* Program Manager of Research, South Dakota Department of Transportation. Mr. Huft is the former Chairman of the AASHTO National Research Advisory Committee and the former Vice Chairman of the AASHTO Standing Committee on Research.

- *Richard C. Long,* Director of Research, Florida Department of Transportation. Mr. Long is the past Chairman of the AASHTO Region 2 Research Advisory Committee and a current member of the AASHTO Standing Committee on Research.

- *Harold "Skip" Paul, P.E.,* Associate Director of Research, Louisiana Transportation Research Center. Mr. Paul is the current Chairman of the AASHTO Region 2 Research Advisory Committee and a current member of the AASHTO Standing Committee on Research.

The assessment by the panel members of Virginia's research program, as well as their suggestions, takes on special significance in light of their breadth of knowledge, national perspective, and national prestige. No other group of panelists would be so well positioned to give an independent, objective assessment of the program and suggestions on how to improve it.

CHARGE TO THE PEER EXCHANGE PANEL

Several weeks prior to the peer exchange, Dr. Allen contacted the members of the panel and established the scope of work and emphasis areas for the upcoming exchange. The charge to the panel was to review the VTRC research program and identify action items to help make VTRC the very best it could be. In particular, the panel was asked to provide their thoughts on

how to increase VTRC's impact, national visibility, and strength as a transportation research organization. The breadth of experience and national reputation of the panel members made their review especially valuable as part of the development of the First Place Strategy for Research.

CONTENT AND FORMAT OF THE PEER EXCHANGE

The peer exchange was conducted over a three-day period. Appendix B provides the agenda. Dr. Allen began by reviewing the history of research in VDOT and the establishment of VTRC as a cooperative effort by VDOT and the University of Virginia. He then discussed current relationships with the University of Virginia, Virginia Tech, and the Virginia Tech Transportation Institute, including a review of significant initiatives and projects undertaken for VDOT. Dr. Allen characterized VTRC's exemplary return on VDOT's investment through focused, applied research. He emphasized the importance of VTRC's research advisory committees (RACs), which serve as a vehicle for input by VDOT executive management on selected projects. Next, William E. Kelsh, VTRC's Associate Director for Administration, provided an overview of VTRC's finance and operations including the organizational structure, staffing, funding, and administration.

As the next feature on the agenda, Lester A. Hoel, L.A. Lacy Distinguished Professor of Engineering at the University of Virginia, presented an overview about VTRC's partnership with the university. Dr. Hoel concentrated on the strong graduate assistantship and joint appointee program. Thomas A. Dingus, Director of the Virginia Tech Transportation Institute, presented a summary of VTRC's cooperative agreement with VTTI through the Smart Road. Dr. Dingus described the Smart Road facility, which includes the roadbed and a sophisticated testing and information infrastructure. He also reviewed many of the successful research projects conducted there since its inception in 2000.

After the overview of Virginia's transportation research program, the discussion and exchange focused on the following four questions presented by Dr. Allen on behalf of the VTRC leadership team:

1. *Based on the presentations, the discussions, the materials you have reviewed, and the responses to the questions you have posed, what is your assessment of the Research Council and the research program at VDOT?* Among important considerations, include staff size and competence, financial and other resource support, university cooperation and partnerships, the program development process, program content, implementation, marketing, and national involvement and visibility.

2. *What opportunities have you identified for strengthening the research program and the way it is developed, delivered, marketed, and implemented? What actions would you recommend to make the VDOT research program the very best it can be in terms of program content, delivery, impact, and visibility both in Virginia and nationally?*

3. *What things have you identified that can be valuable to consider for addressing and enhancing the transportation research program in your state?* (To be answered by each panel member.)

4. *What is your assessment of the Virginia Peer Exchange and the way it was conducted? How can it be improved?*

RESPONSES OF THE PEER EXCHANGE PANEL TO THE FOUR QUESTIONS

1. Based on the presentations, the discussions, the materials you have reviewed, and the responses to the questions you have posed, what is your assessment of the Research Council and the research program at VDOT? Among important considerations, include staff size and competence, financial and other resource support, university cooperation and partnerships, the program development process, program content, implementation, marketing, and national involvement and visibility.

- VTRC is already recognized as one of the top state transportation research programs based on its technical contributions and its partnership initiatives with other public and private organizations.

- VTRC involves a large number of VDOT staff and managers in its RACs, but not all RACs are regularly active.

- VTRC is well staffed, both numerically and in terms of qualifications.

- VTRC enjoys sound financial support from VDOT through SPR, state, and special funding for pavement innovation and system operations.

- VTRC has also secured additional funding through grants from FHWA, the National Cooperative Highway Research Program, private industry, and other national programs.

- VTRC holds leadership positions on national transportation research committees and task forces.

- VTRC enjoys a productive arrangement for shared positions with the University of Virginia.

- VTRC has established a classification system that recognizes both technical achievement and research management responsibilities.

- VTRC staff fulfill a valuable role as expert consultants to VDOT.

- VTRC has begun its knowledge management initiative with an innovative project to capture knowledge and insights from managers of mega-projects.

- VTRC staff represent a valuable resource of institutional knowledge through continuity of its leadership team.

2. What opportunities have you identified for strengthening the research program and the way it is developed, delivered, marketed, and implemented? What actions would you recommend to make the VDOT research program the very best it can be in terms of program content, delivery, impact, and visibility both in Virginia and nationally?

Project Panels

- Formalizing the activities of the RACs and using them or project-specific panels comprising end users—both public and private—to define projects, monitor research progress, and promote implementation throughout the project could strengthen the quality and relevance of research.

- VTRC uses RACs primarily to identify research needs, but RACs may lose contact with ongoing and completed research. VTRC should use the results of its RAC survey to identify where RACs should be created, disbanded, or reinvigorated.

Implementation

- Selecting potential research projects based on both research need and implementation potential could improve the chances of implementation success.

- Implementation could be improved by securing implementation commitments prior to initiating research projects or alternatively by explicitly assigning implementation plan responsibilities upon completion of the research.

- Assigning the duty of tracking and promoting implementation could more systematically move products from research to deployment.

- Dedicated funding for implementation activities could make it easier for line units of VDOT to deploy research products.

- Creation of the knowledge management office and integration of the technology transfer team provide a significant opportunity to track and accelerate implementation of research products.

Effectiveness of Research

- Clearly establishing the expectation level of research projects—ranging from development of basic knowledge through full deployment of operational research products—would help communicate realistic expectations.

- Specialty conferences or workshops for specific topics and audiences could help identify research needs, communicate research findings, and resolve implementation issues.

- VTRC should pursue opportunities to attend and participate in regularly scheduled VDOT meetings to increase understanding of departmental needs.

- Using lump sum rather than cost reimbursement contracts could improve the accountability of researchers and the timeliness of research project completion. Lump sum contracts could be based on either task progress or milestone completion.

Marketing and Communication

- VTRC should consider using Utah's and Texas's media methods for outreach to Virginia's public. In these state DOTs, public relations staff provide the media with video, with or without text, which serves to educate the public about where their investment is being spent and how they benefit, using research as an example. This may occur four to six times per year and fosters public good will.

- VTRC's communication strategy could benefit from a rudimentary marketing plan that identifies specific target audiences, key messages, and effective communication methods.

- VTRC may wish to consider a customer survey to assess awareness of research within VDOT and to help target communication.

Broadening Research Influence

- VTRC may be able to recruit additional research ideas and researchers through limited use of an open RFP process.

- VTRC's national research influence could be enhanced by actively engaging in upcoming national research initiatives such as the Future Strategic Highway Research Program.

- Expanding collaborative relationships with additional universities could expand the range of topics amenable to research.

Succession Planning

- VTRC should use leadership training, mentoring, and project management experience to prepare staff for advancement. Strengthening the VDOT leadership academy could increase its value to VTRC staff.

3. What things have you identified that can be valuable to consider for addressing and enhancing the transportation research program in your state? (To be done by each team member.) (Mr. Casanova of the FHWA and the VTRC Leadership Team also offered their answers.)

Wesley S. C. Lum, California Department of Transportation, Panel Chair

- Present to the Caltrans research management the VTRC Dashboard to track the progress of projects and activities.

- Present to the Caltrans research management the concept of industry and university representatives on technical advisory panels.

- Present to the Caltrans research management the concept of project panels to guide each research project. The panel would have the responsibility of refining the problem statement, writing the request for proposal, reviewing and recommending the contractor, reviewing the research milestones and final product, and recommending acceptance of the final product for deployment or further research**.**

- Obtain and evaluate for applicability in Caltrans the Louisiana Department of Transportation and Development's duty statement for the implementation engineer.

- Obtain and evaluate for applicability in Caltrans the VDOT scientist classification.

- Present to the Caltrans research management the VTRC concept of conducting regular meetings on issues (e.g., mega-projects) to share lessons learned and best practices.

David L. Huft, South Dakota Department of Transportation

Although South Dakota's research program differs significantly from Virginia's in size and organization, I found the peer exchange focus areas extremely pertinent. In some cases, the peer exchange discussions confirmed the wisdom of actions being contemplated in South Dakota, while in others, they provided valuable insights for refining or redirecting contemplated actions. In both cases, the results of this peer exchange can be quickly applied.

On the basis of this peer exchange, I intend to:

- Immediately inform the South Dakota Bureau of Personnel of VTRC's position classification system for research scientists and use this information in the bureau's current effort to reclassify SDDOT's research staff.

- Similarly to a recent VTRC effort, organize a "mini-leadership conference" for SDDOT research staff, emphasizing skills in project management and research program administration.

- Develop a research marketing plan that clearly identifies key messages, target audiences, and effective communication methods for each.

- Identify recent research products from Virginia—for example, research on pavement damage from slow-moving vehicles—that have immediate application in South Dakota.

- Develop guidance to help research project managers and project panels evaluate implementation needs and identify potential technology transfer methods for starting, ongoing, and completing projects.

- On a quarterly basis, communicate with Virginia regarding its knowledge management initiative and review its applicability to SDDOT.

- Share findings of VTRC's Peer Exchange with SDDOT's Executive-Level Research Review Board to illustrate common concerns and to broaden board members' perspective of transportation research.

Richard C. Long, Florida Department of Transportation

I feel that the composition of the Peer Exchange Team (invited guests and VTRC staff) was excellent. The exchange provided an uninterrupted opportunity to reflect and discuss improvement issues that often go unattended because of other daily priorities. The interchange of ideas and thoughts shared during this exchange renewed my convictions to concentrate on the following when I return home:

- Re-engineer the current activities of Florida's LTAP program (located at the University of Florida) to force a true partnership with the Research Center.

- Develop a dashboard that reflects the status of ongoing research projects.

- Improve our marketing efforts of research results.

- Develop a process for tracking implementation successes over a long period of time.

- Develop a "Green Sheet," which contains written recommendations on proposed research

implementation or policy changes, to be forwarded from the RAC(s) to VDOT executive management.

- Re-write a position description to allow for the added responsibility of a deployment coordinator.

- Change lump sum billings from percent complete to a process based on milestones.

Harold "Skip" Paul, Louisiana Transportation Research Center

- Initiate a more formal, but voluntary program within LTRC research to provide for succession planning. Use it to cross-pollinate technical areas.

- Knowledge management requires action. We at LTRC and LADOTD face similar problems with the transfer or loss of empirical knowledge. The value of institutional knowledge or the loss thereof outweighs the cost of capturing this information.

- Information Management—with the construction of our Transportation Training and Education Center, we need to initiate an Information Assistance Program support study to hire librarian/information assistant.

- Revisit opportunities such as TRB and other conferences to promote research solutions and benefits with an LTRC information booth.

Lorenzo J. Casanova, Federal Highway Administration–Virginia Division

- Help VTRC create an implementation tracking system.

- Encourage the production of the *VTRC Annual Report.*

- Encourage VTRC to conduct a Risk Assessment Evaluation.

- Help VTRC find ways to get the potential users involved in a project from its inception.

- Spend more time working with VTRC.

Leadership Team, Virginia Transportation Research Council

Program Development.

- VTRC needs to adopt a longer term, vision-based selection process for the research program hand-in-hand with a more comprehensive budgeting process.

- VTRC needs a more formalized process for solicitation of project ideas or problem statements, including assessment of probability of success, giving RACs more substantial input into the selection of research topics and obtaining their buy-in when prioritizing and assessing feasibility.

Gary R. Allen, Ph.D., Chief of Technology, Research & Innovation

- VTRC should further formalize the technical review panels for every project. Rather than just peer review, VTRC needs to advise every project from cradle to grave. VTRC should necessarily include a champion for the project. The champion may, or may not, be a RAC member. Panels need to be selected more carefully and should include representatives from appropriate associations and groups responsible for implementing the work. Panels should comprise three to six people and should meet at milestones during the project to review progress, funding, extension, or termination, as appropriate. Panels should identify players and develop the implementation plan. Some projects do not lend themselves to ready development of an implementation plan.

Implementation.

- The potential for implementation should be considered at the program development level. VTRC needs to develop a strategic plan for research that is endorsed by the Commissioner's Staff. This plan should drive the budget allocation process.

- Associate directors need to develop strong relations with VDOT chiefs to foster communication and bolster implementation efforts. Some individuals in key positions may become barriers to communication at times.

- VTRC needs to assess its implementation record, looking back at least five years, and track recommendations and the degree of implementation achieved. This may require significant resources to achieve. Implementation should become a major part of the associate directors' job. A plan needs to be established to track implementation in the future, which may be conducted differently than the retrospective assessment.

Human Resource Development.

- VTRC needs to develop a consistent approach to recruiting, mentoring, promoting, and retaining staff. This should be fostered by the associate directors, but it cannot fall entirely to them. Some staff will require more mentoring to "get going" than will others. Perhaps special assignments and committee participation (e.g., a task group of newer scientists could assess the implementation record over the last five years) could be useful learning arrangements.

Marketing and Outreach.

- VTRC should host individual technical conferences to focus on areas of research and should then disseminate the findings and put them into practice. The key is having a forum whereby VDOT and consultants gain buy-in.

- VTRC should consider bidding on National Cooperative Highway Research Program projects and pooled fund studies, as well as participating on review panels for these studies. This could increase national visibility. The benefit would be national exposure and the bonus of an additional funding resource. This may take time to build.

- VTRC needs to develop communication tools and practices, at different levels of sophistication, to reach VDOT internal customers. These should be targeted appropriately to different audiences within the organization.

4. What is your assessment of the Virginia Peer Exchange and the way it was conducted? How can it be improved?

Peer Review Panel

- The peer exchange was well planned and graciously accommodated.

- Useful reports and materials were provided in advance so face-to-face time could be devoted to discussion of issues.

- A spirit of open discussion and participation existed throughout the meeting.

- Extending the peer exchange one more day might have allowed deeper discussion and individual time to reflect on observations.

Leadership Team, Virginia Transportation Research Council

- There has been very useful interaction, with ideas to follow up on. The concept of more rigorous project panels should be pursued. VTRC should consider extending the function of its current technical review panels to become the formal project panels. It is difficult to cover an enormous amount of ground in a brief time. The diversity of the panel is a

very positive aspect of this peer exchange, some with strong in-house research, and some heavily contract oriented, with programs of varying size. The structure and focus of the programs vary widely. It is helpful to have the FHWA element.

- Discussion of implementation and project development has been most helpful. The discussion of staff development provided some nuggets. Incorporating knowledge management is beneficial. The timing will benefit the First Place Strategy effort.

- Ideas for improvement:

  1. Provide context up front on VTRC's place within VDOT's structure.

  2. Provide a better outline of the RACs and the program development process, as well as VTRC's relationships with other divisions in VDOT.

  3. Improve logistics for the tour.

  4. Have a brief presentation from each panel member to provide a perspective of his or her program.

Appendix C provides the presentation made by the Peer Exchange Panel to the Commissioner and the VTRC staff.

COMMENTS BY COMMISSIONER SHUCET

At the end of the panel's presentation of findings, Commissioner Shucet expressed the following thoughts and comments:

- He appreciated the diversity and insight of the panel.

- He stated that the First Place Strategy is not about direct competition, but rather the best use of public resources. However, striving to be Number 1 only makes sense because who would set a goal to be Number 12?

- He was encouraged that the panel members were taking so much back from the peer exchange, particularly ideas pertaining to knowledge management and marketing. What could be a better compliment than to have research leaders from other states express appreciation for the level of competence of your organization?

Philip A. Shucet, Commonwealth Transportation Commissioner

- He asked Dr. Allen what one recommendation he would choose to implement immediately. The answer was: Establish a project advisory panel for *every* project. The panel would oversee the work, from concept and problem statement all the way through implementation. The Commissioner emphasized that this should be undertaken immediately: there was no need to form any committees, no need to conduct any studies, no need to write any reports, just do it.

- He emphasized that VTRC should identify just two or three ideas from the peer exchange, in pursuit of the First Place Strategy for Research, and focus on those over the next several months.

- He noted that VDOT's budget has been continually cut for the last three years. He also noted that although it is common to cut research and planning activities in times of financial constraint, these efforts are especially important because they hold the greatest potential for positive returns. This is why funding for research has been substantially increased during the past two years while the rest of VDOT has endured continual cuts in the construction and maintenance programs.

- Because of the emphasis on implementation and its importance during the peer exchange, he pledged to devote an additional $1 million, beyond the recent additions already made (i.e., $1 million for pavement, structures, and roadside assets research and $2.5 million for system operations research), to facilitate implementation of research. This is a significant commitment to research in the austere times we face. He noted that the focus on research implementation does not diminish the importance of some longer-term research and our commitment to it so long as those projects are selected with care, with an eye toward their long-term potential for implementation.

- He liked Mr. Casanova's observation about the need for a risk assessment, as relates to knowledge management, to determine where important information that is at the greatest risk of being lost resides within the organization.

- He stated that marketing is an important activity and should be viewed as an essential part of disseminating knowledge and letting the public know what we do and how it benefits them.

APPENDIX A

DRAFT ACTION PLAN FOCUS AREAS FOR A FIRST PLACE STRATEGY FOR RESEARCH

The following is a draft of focus areas and potential action items for guidance and consideration as we develop the Action Plan for the VTRC First Place Strategy for Research. The areas are not all-inclusive or restrictive and should be considered as a starting point for discussion leading to the final product. They were derived from the discovery and information gathering that we collectively have been engaged in during the past several months.

Our goal is to complete as much of this outline as possible prior to September. Accordingly, these action items will constitute the final section of the First Place Strategy Report scheduled for completion in early fall.

FOCUS AREA 1—MARKETING AND COMMUNICATION

- Establish and staff a Marketing Lead position in VTRC.
- Develop and distribute on a regular schedule a Research Activity Newsletter for VDOT-wide distribution.
- Publish annually a high-quality annual report.
- Foster and encourage a visible external outreach program and culture, i.e., attendance and presentation of papers and poster sessions at national meetings such as TRB and others.
- Host periodic national meetings to promote research exchange.
- Continue to enhance the VTRC library and emphasize its function as a marketing tool both internally and externally.

FOCUS AREA 2—IMPLEMENTATION AND KNOWLEDGE MANAGEMENT

- Establish a requirement for an implementation plan as a part of each project.
- Revise and revamp the Technology Transfer and LTAP Programs.
- Develop integration between research recommendations and implementation.
- Develop a method for tracking and measuring implementation success.
- Develop training in the use of research products.
- Together with marketing staff, utilize multi-media tools (workshops, video, CDs) to disseminate research results.
- Continue integration of research results and products into the overall Knowledge Management mission.
- As the Knowledge Management role develops and matures, consider adding the library to its function.

FOCUS AREA 3—HUMAN RESOURCE DEVELOPMENT

- Develop and implement a succession plan for all levels.
- Implement a mentoring and coaching activity in each functional area to develop new employees and promote upward mobility for existing staff.
- Complete and implement the career ladder personnel program.
- Develop training in leadership, management, and business practices for all personnel engaged in or being considered for supervisory roles.
- Take advantage of opportunities for staff to interface with the Leadership Team as they participate in national forums.
- Schedule a regular interface with the Director for discussions of timely issues within VDOT.

FOCUS AREA 4—PROGRAM DEVELOPMENT, EXPANSION, AND MONITORING

- Develop a series of macro-scale broad research themes with a 10-year time horizon. This thematic research agenda should be developed by bringing together VDOT executive management, business and community leaders, academic leaders, and selected national leaders in the transportation community.
- Develop annual tactical technical research projects and technical assistance projects within the scope of these themes.
- Using the recent RAC survey, update and revise the RAC process.
- Expand academic research partnerships through the use of cooperative agreements such as those currently in place with UVA and VA Tech.
- Establish performance measures to ensure that the elements of the research program are performed on time, within budget, and with quality results and that they meet objectives. Include methods for measuring ROI, trends, and implementation rates.
- Building on recent activities with the asphalt industry, establish partnerships with industry in other areas to promote joint funding of research and expand implementation of research results.

FOCUS AREA 5—BUSINESS PRACTICES, FINANCAL CONTROLS, AND COMPLIANCE

- Devote additional resources to financial and administrative matters.
- Establish an internal review of control and compliance annually.
- Review, update, and simplify internal procedural manuals.
- Complete implementation of rating system for all contracts.

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APPENDIX B
VIRGINIA PEER EXCHANGE AGENDA
August 29, 2004—September 1, 2004

Sunday, August 29, 2004—English Inn

6:30 PM Get Acquainted Gathering (Suite at English Inn). Dinner at nearby restaurant when all panel members arrive.

Monday, August 30, 2004—Knowledge Management Office

7:30 AM Continental Breakfast (Knowledge Management Office)

8:00 AM Logistics/Agenda—Bill Kelsh
Orientation/Expectations—Gary Allen
Panel Chairman's Remarks—Wes Lum

8:30 AM VTRC Program Overview—Kelsh/Allen
- Organization
- Staffing
- Finances
- FY05 Work Program

University Relationships—Tom Dingus, Virginia Tech Transportation Institute, and Les Hoel, University of Virginia

10:15 AM Break

10:30 AM Depart for Tour of Facilities
- Tour Shelburne Building and Labs
- Tour UVA Smart Travel Lab

12:30 PM Return to Knowledge Management Office for Lunch (provided)

1:15 PM Overview: Commissioner's Assignment Regarding Research—Gary Allen and Charlie Miller, Consultant

1:30 PM Discussions on Making VTRC the Best It Can Be—These will be open and free-flowing discussions and will consist of suggestions, ideas, shared experiences, and lessons learned from the peer exchange panel. Potential topics include ensuring effective marketing and outreach programs, ensuring effective implementation and technology transfer, ensuring strategic research program planning, ensuring quality contract research from universities, ensuring effective succession planning, improving national visibility, enhancing university

partnerships, and any other topics the panel may wish to include. The goal is to take advantage of the many talents and experiences of the panel and to identify key action items the VTRC leadership team can take to improve the VTRC research program, its implementation, its effectiveness, and its national stature.

3:00 PM Break

5:00 PM Adjourn for the Day

6:00 PM Informal Discussions and Dinner at Local Restaurant—TBA

Tuesday, August 31, 2004—Knowledge Management Office

7:30 AM Continental Breakfast

8:00 AM Continue Discussions on Making VTRC the Best It Can Be

10:00 AM Break

12:00 Noon Lunch (provided)

12:45 PM Develop Report and Recommendations

3:00 PM Break

5:00 PM Adjourn

6:00 PM Informal Discussions and Dinner with Commissioner Shucet at Local Restaurant

Wednesday, September 1, 2004—Research Council Auditorium

7:30 AM Continental Breakfast

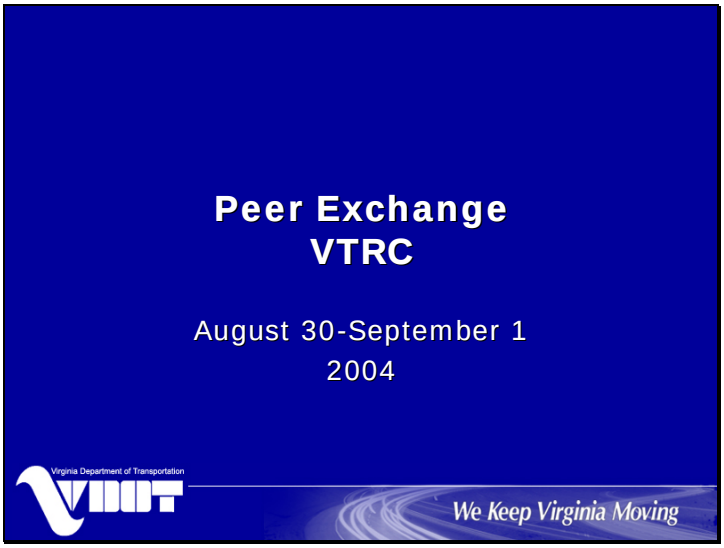
8:30 AM Report of the Peer Exchange Panel to Commissioner Shucet and VTRC Staff

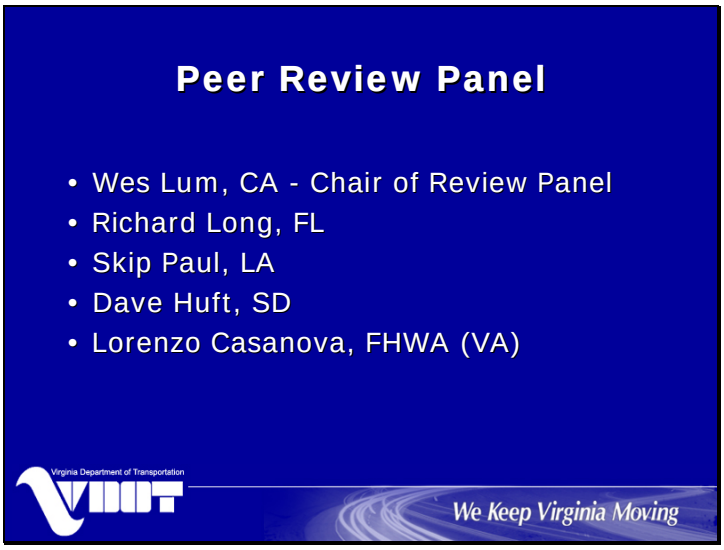
9:15 AM Discussion

10:15 AM Close Out, Gifts, Final Remarks

11:00 AM Departure

APPENDIX C
PEER EXCHANGE PRESENTATION TO THE COMMISSIONER AND VTRC STAFF





Questions Posed in Four Areas

- What is your assessment of VTRC and its research program?
- What are opportunities to strengthen the research program?
- What can you take home to improve your program?
- What is your assessment of this Peer Exchange? How can it be improved?

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What Is Your Assessment of VTRC and Its Research Program?

- VTRC is already recognized as one of the top transportation research organizations nationally
- VTRC advantages: large, well-qualified staff; financially sound; productive arrangements with universities; leadership on national committees; supportive HR classification system

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What Is Your Assessment of VTRC and Its Research Program? (Cont.)

- VTRC is a respected and recognized resource by VDOT: high number of requests for expert technical assistance
- Knowledge Management is an innovative initiative
- Large number of VDOT representation on RACs, but RACs may loose contact with ongoing and completed research

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What Are Opportunities to Strengthen the Research Program?

- Project panels for all projects
- Improve implementation potential
- Actions to improve effectiveness of research
- Marketing, communication
- Broadening research ideas and influence
- Succession planning

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Project Panels

- Have project panels for all projects from cradle to implementation
- Project panels to include reps of end users, both public and private
- Project panel to define project, monitor/help research progress, promote implementation

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Actions to Improve Implementation Potential

- Consider both research need and implementation potential in project selection
- Secure implementation commitment prior to project initiation
- Specifically assign the duty of tracking and promoting implementation

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Actions to Improve Implementation Potential (Cont.)

- Integration of Knowledge Management and T^2 provides opportunity to accelerate implementation
- Dedicated funding for implementation could help to deploy research products

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Actions to Improve Effectiveness of Research

- Establish clear expectations for research projects and communicate them
- Hold specialty conferences to identify research needs, communicate research findings, and resolve implementation issues
- Increase attendance at VDOT meetings to understand VDOT's needs better

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Marketing and Communication

- Consider Utah's and Texas' media methods for outreach in Virginia
- Prepare a marketing plan that defines target audiences, key messages, and communication methods
- Consider a customer survey to assess awareness of research

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Broadening Research Ideas and Influence

- An open RFP process could invite additional research ideas and researchers
- National research influence could be enhanced by active engagement in upcoming national research initiatives
- Expand collaborative relationships with additional universities

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Succession Planning

- Mentoring
- Leadership training
- Project management experience

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What Can You Take Home to Improve Your Program?

- California
- Florida
- Louisiana
- South Dakota
- Virginia

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California – Wes Lum

- VTRC Dashboard
- Industry and university representatives on Technical Advisory Panels
- Project panels to guide each research project

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California (Cont.)

- Evaluate the concept of the Implementation Engineer as used in the Louisiana Department of Transportation and Development
- Evaluate the VDOT Scientist Classification for applicability in Caltrans
- Present idea of Knowledge Management project on sharing lessons learned and best practices from mega-project managers

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Florida – Richard Long

- Great peer exchange team - both guests and VTRC
- Opportunity to reflect and discuss otherwise unattended issues
- Renewed convictions to pursue actions in several areas

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Florida (Cont.)

- Re-engineer current activities of Florida's LTAP program (located at the University of Florida) to force a true partnership with the Research Center
- Develop a dashboard like VTRC to show status of ongoing research projects
- Improve marketing efforts

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Florida (Cont.)

- Develop a process for tracking implementation successes over a long period of time
- Develop a "Green Sheet"
- Re-write a position description to allow for the added responsibility of a Deployment Coordinator
- Change lump-sum billings from percent complete to a process based on milestones

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Louisiana – Skip Paul

- Initiate a more formal, but voluntary program within LTRC research to provide for succession planning. Use it to cross-pollinate technical areas.
- Knowledge Management requires action. We at LTRC & LADOTD face similar problems with the transfer or loss of empirical knowledge. The value of institutional knowledge or the loss thereof outweighs the cost of capturing this information

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Louisiana (Cont.)

- Information Management—with construction of Transportation Training and Education Center, we need to initiate an Information Assistance Program support study to hire librarian/information assistant
- Revisit opportunities such as TRB and other conferences to promote research solutions and benefits with LTRC information booth

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South Dakota – Dave Huft

- Immediately inform the SD Bureau of Personnel of VTRC's position classification system for research scientists and use this information in their current effort to reclassify SDDOT's research staff.
- Similarly to a recent VTRC effort, organize a "mini-leadership conference" for SDDOT research staff, emphasizing skills in project management and research program administration.

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South Dakota (Cont.)

- Develop a research marketing plan that clearly identifies key messages, target audiences, and effective communication methods for each.
- Identify recent research products from Virginia—for example, research on pavement damage from slow-moving vehicles—that have immediate application in South Dakota.
- Develop guidance to help research project managers and project panels evaluate implementation needs and identify potential technology transfer methods for starting, ongoing, and completing projects.

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South Dakota (Cont.)

- On a quarterly basis, communicate with Virginia regarding its Knowledge Management initiative and review its applicability to SDDOT.
- Share findings of VTRC's Peer Exchange with SDDOT's Executive-Level Research Review Board to illustrate common concerns and to broaden board members' perspective of transportation research.

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FHWA – Lorenzo Casanova

- Help to create an implementation tracking system
- Encourage the production of the Annual Report
- Encourage the conduct of a Risk Assessment Evaluation
- Help to find ways to get the potential users involved in the project since its inception
- Spend more time working with the VTRC

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Virginia

- Program Development
- Implementation
- Human Resource Development
- Marketing and Outreach

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Program Development

- Adopt long-term selection process for research program and tie to budget
- Rate prospects for implementation and use in project selection
- Emphasize stakeholder buy-in to improve chances of implementation
- Expand use of Technical Review Panels

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Implementation

- Develop strategic plan for research to be endorsed by Commissioner's staff
- ADs to develop strong relationships with Commissioner's staff
- Assess implementation record over past five years and develop more formal tracking of implementation success

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Human Resource Development

- Continue to emphasize recruitment of strong candidates for staff
- Expand opportunities and practices for mentoring
- Implement expanded career ladder presently under review

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Marketing and Outreach

- Host technical conferences in key areas in order to improve buy-in, implementation, technology transfer, and knowledge sharing
- Identify target audiences for marketing, and design market tools catering to those audiences
- Pursue NCHRP and other grants, pooled funds

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Panel's Assessment of Peer Exchange

- The Peer Exchange was well planned and graciously accommodated.
- Useful reports and materials were provided in advance so face-to-face time could be devoted to discussion of issues.
- A spirit of open discussion and participation existed throughout the meeting.
- Extending the Peer Exchange another day may have allowed deeper discussion and individual time to reflect on observations.

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VTRC's Assessment of Peer Exchange

- Very useful interaction and discussions
- Diversity of the panel key to success
- FHWA participation important
- More context needed on VDOT organizational structure
- Possible need for an additional day
- Brief presentations from panel members on their programs

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