MEMORANDUM

TO : Personnel Committees   October 5, 1977

FROM : Mathematics Department Personnel Committee

Humboldt State University Arcata, California, U.S.A.

SUBJECT : Promotion of Professor Vithalbhai Patel

The Mathematics Department Personnel Committee is unanimous in its judgement that the attached documents will show that Dr. Patel more than meets the criteria for promotion to Full Professor. The committee, upon careful examination of all of the evidence, has found him to be exemplary in service to the University, invaluable as a resource person in applied mathematics, and distinguished as a teacher and as a scholar.

Teaching. The excellents of Dr. Patel's teaching is thoroughly documented by letters from his colleagues who have first-hand knowledge of his teaching, but his student evaluations, and by unsolicited letters from former students. In referring to his teaching, his colleagues use such terms as 'excellent', 'professional', 'first class', 'masterly', 'outstanding', 'superlative', 'dedicated', and 'extremely smooth'. His students use such terms as 'the best', 'one of the best', 'excellent!!!', 'Well practiced', 'outstanding', and 'great!'.

This committee has prepared a summary report of Dr. Patel's student evaluations over the last four quarters, a summary chart of the rating scales for fall '76 and spring '77, and a summary chart of the rating scales for fall '76 and spring '77, and a summary chart of the rating scale for overall teaching

effectiveness for the last three years. The indication is that the large majority of his students consider him to be an exceptionally fine teacher. There is also a clear indication that he is at his best in the upper division applied mathematics courses. Of all the students that Dr. Patel has had in upper division classes over the last three years, 671 rated his overall teaching 7, 95% gave him either 6 or 7, while 100% gave him either 5, 6 or 7 on a 7 point scale for an average rating of 6.6. His average rating over the last three years by all of his students was 6.2 on overall teaching.

There is an additional dimension to Dr. Patel's teaching that should be noted. There are comments throughout his student evaluations that indicate their feeling for him as a person, such as: '... one of the nicest men I've met on campus', 'Friendly, warm, open, polite...', '... one of the nicest teachers I have ever met..', 'His overall personality is fantastic.', 'He is the most considerate and understanding man I have ever met,'

Scholarly Activities. The contents of Dr. Patel's file clearly establish that he has been continuously engaged in successful research activities; that his projects are exceedingly demanding; that he consistently exercises a high degree of scholarship; and that he has significantly contributed to the numerical

analysis of certain problems in fluid mechanics. The file also gives a clear indication that Dr. Patel will continue this pattern in the future.

Past and Present Publications.

In his PDS form under publications and papers, Dr. Patel lists an impressive string of papers presented at meetings of the American Mathematical Society, at the 1976 National Fall Meeting of the Society for Industrial and Applied Mathematics at Georgia Institute of Technology and at the 1975 SYNSPADE (Symposium on the Numerical Solutions of Partial Differential Equations) Conference at the University of Maryland. Since his last promotion he has had a paper published in Computers and Fluids, 1976, and he has had a paper accepted for publication in the Journal of Computational Physics, 1977. Both of these journals are highly respected in their fields and both require rigorous reviewing and refereeing procedures.

Research Standards and Demands.

In Appendix 1 there are copies of each of Dr. Patel's publications as well as a copy of the paper that he presented at the 1972 AMS meeting in La Jolla. The mathematical formulations indicated in these works are extensive and require great care and precision. The design and implementation of an error-free computer program to carry out the unbelievably large amount of calculations necessary in an acceptable amount of computer time is no small task especially on a computer as small and as slow as ours. The analysis and checking of the data generated by the computer including the hand drawing of the plots requires endless hours of very exacting work. The demanding requirements of Dr. Patel's work is also attested to in the letter to him from Dr. Milton Van Dyke, Professor of Applied Mechanics, Stanford University, dated 14 March 1977 and in the letter by Professor Tropp. Both of these letters are in the 'new letters' folder.

Scholarship and Significant Contributions.

The acceptance of Dr. Patel's papers for publication by prestige journals in applied mathematics (with no modifications in one case and only minor modifications in the other case) testifies to the high quality of his research. The interest shown in his work by such authorities as Prof. Van Dyke from Stanford, who is the editor of Annual Review of Fluid Mechanics, Prof. Suhrit K. Dey, Dept. of Math., Eastern Illinois University, and Dr. Anthony J. Policastro, Energy & Environmental Systems Division, Argonne National Laboratory, indicate recognition of the significance of his work. Incidentally, Dr. Policastro included with his letter an announcement of a position in Computational Fluid Dynamics at the Argonne Laboratories for Dr. Patel's consideration. Included with the paper, 'Karman Vortex Street Behind a Circular Cylinder by the Series Truncation Method', document 1.5.4 in Appendix 1 are copies of the reviewers' letters. One of the reviewers stated,

'This paper gives a very detailed study of the generation of the Karman vortex street behind a circular cylinder. ... this seems to be the best and most detailed account of the phenomenon given so far.'

A second reviewer made this statement:

'As far as I am aware, this is the first major attempt to use the series truncation method to calculate a flow with asymmetrical characteristics... It shows that the series truncation method gives a feasible way of treating problems of asymmetrical flows.'

Attached to the copy of the paper 'Time-dependent Solutions of the Viscous Incompressible Flow Past a Circular Cylinder by the Method of Series Truncation' published in Computers and Fluids, document 1.3.5, Appendix 1, is a list of the people who have requested reprints of this paper. Interest in his work is clearly international in scope.

The collegial letters by Professors Thompson, Dept. of Physics, Biles, Householder,

Kieval, Kostinsky, and Tang, Dept. of Mathematics, are offered as further evidence of his scholarly attainments.

Finally, Dr. Patel has been selected by the editors of the <u>Journal of Computational Physics</u> as a referee for this journal. A copy of his first review is included as document 1.6 in Appendix 1. Dr. Patel has also been elected to membership in the American Academy of Mechanics. The membership in this organization is restricted to those who helped to advance the understanding of mechanics.

Promise of Continued Research. After his last 'paper was completed and accepted for publication, Dr. Patel immediately commenced a new project. A description and progress report on this latest project is included as document 1.5.5 in Appendix 1. A listing of the computer program that he has developed for this project is also included. This, coupled with his past record of continuous creative production offers sufficient promise for the future.

Service. Dr. Patel has been very active in department affairs, on department committees, and has served on two University committees. A list of his formal committee assignments can be found in his PDS form. Other information concerning his committee work can be found in the letters by his colleagues, and in Appendix 3. His colleagues have expressed appreciation for his high degree of integrity, his sound judgment, his industriousness, his reliability, his enthusiasm, his sensitivity for others, and his constructive attitude.

In closing, the committee wishes to draw attention to Dr. Patel's special value to the University as a resource person in the combined fields of applied mathematics, numerical analysis, computer programming, physics, and engineering. The physics department has recognized his special talents by inviting him to join them in offering three senior level physics courses. The engineering department is using him again this fall to offer an engineering course. Dr. Biles stated in his letter, 'You simply would have to look awfully hard before you could ever find a better teacher of applied mathematics than Dr. Patel.' Dr. Clendenning of the physics department stated, 'There is no doubt in my mind that Dr. Patel is a master teacher and one whom any university should feel proud to have on its faculty.' Dr. Kelly of the physics department writes: 'He treated us to a series of beautiful lectures illustrating how the basic mathematical formulations of fluid mechanics, which are quite complex, can be applied with varying degree of ease, to predict fluid behavior with varying degrees of realism.' Dr. Thompson, chairman of the physics department, stated: '... from the rather extensive feedback I have received it is clear to me that he has been the best mathematics instructor over the last three or four years for our students.' Dr. Hanson of the chemistry department expressed the debt he owes Dr. Patel for help on his own research problem. Dr. Patel has been of special assistance to upper division students of physics and engineering on their individual research problems.

This committee recommends most strongly that Dr. Vithalbhai Patel be promoted to the rank of Full professor.

Charies M. Biles   Victor K.T. Tang
Ron Levine   Henry S. Tropp
                 Roy Tucker, Chairman

I acknowledge that I have read this recommendation and understand that I have a right to add my own statement to this file.

Vithalbhai Patel

Satisfied _____   Not Satisfied_____

Comments: