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**METHODOLOGY DEVELOPMENT
TO SUPPORT NPR
STRATEGIC PLANNING**

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MASTER

FINAL REPORT

METHODOLOGY DEVELOPMENT TO SUPPORT NPR STRATEGIC PLANNING

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PHASE 2
FINAL REPORT

BACKGROUND

Professional Services International, Inc. (PSII), was tasked by Triton Systems Corporation to provide strategic planning support to the Office of New Production Reactors. Specifically, PSII was tasked to "construct the methodology to systematically assess over time, a series of recommended strategic and technical objectives and milestones to consider in the development of the New Production Reactors Program."

Work performed during the time period of September to December 1989 was reported in the PSII Phase 1 Final Report, dated January 1990. Efforts during this initial period provided for:

1. Assembling a staff of experts experienced, and knowledgeable, and possessing unique insight and understanding of programs which have size and substance comparable to the NPR Program. This staff is referred to as the Program Planning Team (PPT) throughout the remainder of this report.
2. Establishing a forum within which this senior review group interacted with the NPR staff in discussing broad programmatic and management issues of significance having NPR concern.
3. Developing and implementing a methodology for screening and researching those programmatic and management issues identified as being of most concern. Documentation of research findings and alternative actions were provided in the form of briefings and individual issue papers to NPR. Two informal reports, which reported the issues raised with

the Quality Assurance and the Environmental Compliance Divisions, were submitted previously. Their titles are included at Attachment B in the final report.

4. Reviewing the Draft Program Plan and identifying and documenting general deficiencies and missing elements found in the plan.

It was concluded that the planning activities should (1) include a near term focus, concentrating on those issues important to assuring that the program meets a Record of Decision (ROD) milestone (late FY91) and (2) a continuation of the longer term strategic planning already in process.

INTRODUCTION AND OVERVIEW

This report covers the work performed by PSII in support of the Office of New Production Reactors during the 9 month period from January through September 1990. Because of the rapid pace of program activities during this time period, the emphasis on work performed shifted from the strategic planning emphasis toward supporting initiatives requiring a more immediate consideration and response. Consequently, the work performed has concentrated on researching and helping identify and resolve those issues considered to be of most immediate concern. Even though they are strongly interrelated, they can be separated into two broad categories as follows:

1. The first category encompasses program internal concerns. Included are issues associated with the current demand for accelerating staff growth, satisfying the immediate need for appropriate skill and experience levels, team building efforts necessary to assure the development of an effective operating organization, ability of people and organizations to satisfactorily understand and execute their assigned

roles and responsibilities, and the general facilitation of inter/intra organization communications and working relationships.

2. The second category encompasses program execution concerns. These include those efforts required in development of realistic execution plans and implementation of appropriate control mechanisms which provide for effective forecasting, planning, managing, and controlling of on-going (or soon to be) program substantive activities according to the master integrated schedule and budget.

In summary, these concerns are predominately near-term, operations oriented. They focus on issues related to the current number and quality of people resources and the ability of the operating process to execute according to plan. In response to the above, the thrust of work performed by PSII has been oriented through the NPR organization, concentrating at the Division level. Division level activities constitute the basic framework of the NPR Program and the division level directors are considered to be the first line management team.

PSII was tasked to develop a methodology which would allow for both the PPT and NPR Executive Group to constructively interact with individual Divisions. The purpose of this interaction was to (1) provide a forum for the DIVDIR to present his approach and plan for executing Division responsibilities, (2) take advantage of the combined experience of the PPT regarding the concerns of the DIVDIR, (3) provide a mechanism which allows the PPT to identify and deficiencies or major risks in the Division plan, and (4) provide the PPT and NPR Executive Group an opportunity to view the Division activities in context with the total program, potentially allowing previously unidentified issues to be identified.

The NPR Division Review Methodology is included as part of this report as Attachment A. The methodology has resulted in the PPT Membership meeting with a specific division each month for two consecutive months. This has resulted in the PPT Membership researching and developing a number of Division focused issues for later presentation and discussion. During this performance interval, there have been 7 PPT meetings held for a total of 11 meeting days. A 2 day meeting in February was conducted at the NPR program level. The remainder of the meetings have focused at the Division level. These meetings were held with the Quality Assurance Division, the Environmental Compliance Division, the Project Control Division and the Progress Measurement Group. Two informal reports were provided NPR. These reports documented the results of the research conducted on those issues of concern to the PPT and recommended actions to be taken for the Quality Assurance Issues and the Environmental Compliance Issues. A list of specific issues included in these reports is provided as Attachment B to this report.

There have been several changes in the PSII consultant staff since the previous work. Mr. Mark Forssell has resigned, and there are two new members: Dr. D. Scott Sink and Dr. Gene Manella. A roster of the current membership along with biographies of the new members are included as Attachment C to this report.

ATTACHMENT A

NP DIVISION LEVEL REVIEW METHODOLOGY

BACKGROUND

The NPR Program currently has seventeen divisions within its organizational structure. Each has a significant program role and responsibility. Existing organization structure has several divisions grouped and reporting to an Office Director who in turn reports to the Director, Office of New Production Reactors (NP-1). Division level activities constitute the basic framework of the NPR Program, and the division level directors are considered to be the first line management team. The NPR Program is transitioning from the conceptual and formulative stages into the design and execution phase. As a consequence, division level elements of the program are now required to become more integrated in executing their responsibilities; consequently, program performance and schedule is becoming more dependent on how well this interaction is achieved. Successful execution then becomes heavily dependent upon the capabilities and actions of the division directors and their respective staffs both while operating within their own organization and while interacting with other divisions and external organizations. Performance of the divisions is compounded by the magnitude of the program and the rapid buildup and program evolution currently in process. NP-1 has requested that the Program Planning Team (PPT) develop and implement a methodology that will provide for (1) identification of significant programmatic issues and potential risks at the division level and (2) perform the research necessary to provide alternative courses of action.

APPROACH

The approach followed was to establish a mechanism for the PPT to interact in a non-threatening manner with individual division level managers and their staff. This was implemented in the form of a series of two sets of interactions spaced about one month

apart and involving NP-1 and his selected staff, the Division Director (DIVDIR) and his selected staff, and the PPT Membership. The purpose of these meetings was to accomplish the following:

- a) establish a fundamental understanding of the motivations, standards, competency, and experience level of the Division through providing the DIVDIR (and his staff) a forum to openly discuss perceived roles, mission, responsibilities, and priorities. Also establish the current approach, sensitivities, and status relative to this division's responsibilities regarding program specific tasks and management of associated problem areas considering risk assessment and avoidance. Office Directors also participated in these discussions.
- b) expose the division level staff to the broader level of general experience and insight inherent in the PPT Membership.
- c) establish a positive relationship between the two groups with emphasis on the role of the PPT as a helper and an available resource, leading to a more direct and supportive relationship in the future.
- d) identify programmatic issues of major concern transcending across the individual divisions and whose indicators are such that they may either be misinterpreted or not perceived in the proper perspective by any individual division element.

The first set of interactions consists of meeting over a two day period with a basic interchange between the Division Director, and his Office Director, to the PPT Membership, a response from the PPT, followed by an open discussion involving all. The second meeting is conducted approximately one month later as a follow up session, allowing the PPT to have adequate time to

research previously identified issues and to consider alternative actions. The results of this research form the basis for more specific discussions between the division, NP-1, and the PPT Membership. This format has proven to be effective in satisfying the above objectives in context with current program needs.

METHODOLOGY

The following is a more detailed discussion of the methodology which currently is being used for interactions between the PPT Membership and the division level NPR organizations.

1. The division to be reviewed is identified by NP-1, and dates are coordinated and scheduled for meeting with the PPT Membership.
2. Lines of communications are then established between the nominated division and the PPT, allowing for the development of a friendly and cooperative relationship.

Approximately one month prior to the review date, PPT staff and NPR representative, M. Shapiro, meet informally with the Division Director. He is briefed on the intent of the meeting, PPT membership and background experience of the individual PPT members, general format that will be followed involving the overall division level NPR-PPT interactions, and the desired scope, substance, and style of the division presentation. DIVDIR is also asked to provide appropriate division level background material for distribution and review by the PPT Membership prior to the first meeting.

3. NP-1 meets with the Division Director several days prior to the first meeting date to provide assurance and guidance, to reinforce the importance of open discussions, and to view the PPT as a potential resource.

4. The first interaction consists of a two day meeting scheduled for two consecutive days. The meeting format for each day is as follows:

DAY 1: The purpose is to provide a forum for the DIVDIR and his Office Director to brief the PPT within the guidelines previously established. The DIVDIR is encouraged to include all of his staff. The meeting format is as follows: (1) 30 minutes - Individual members of the PPT and the division introduce themselves and become acquainted; (2) the DIVDIR and his staff informally brief the PPT with discussions as appropriate. There is no hard restriction on time. (3) A working lunch is served to conserve time, to encourage discussions between individuals/small groups, and to motivate positive and open inter-personal relationships. (4) One hour at the end of the day is reserved for PPT led discussions with DIVDIR and his staff.

At time of adjournment, the notes of the PPT Membership are collected. These notes have been formatted in such a way that the meeting highlights are captured along with issues and concerns. In addition, the notes are personalized such that the interpretation and viewpoint of individual members is also captured. This information is screened, categorized and summarized, and put in the proper format to be used for briefing and discussion during the second day's meeting.

Attendees for the first day are:

- PPT Membership
- NP-1 Program Director
- NP-2 Chief Engineer
- NP-3 Construction Manager
- Office Director
- Division Director
- Division Staff

DAY 2: The major part of this day is spent in an Executive Session of the PPT Membership. The purpose of the session is to identify and discuss all major issues which surfaced during the first day's meeting. The information which was summarized from the first day's activities serve as the basis for initiating the executive session. The DIVDIR returns for approximately the last 1.5 hours of the second day. He then briefs the PPT on those actions he believes necessary based on the first day's exchange. Further discussion and interchange then take place as required. At the end of the meeting, NP-1 summarizes his personal view regarding the resulting issues and priorities and provides specific guidance as appropriate. Unresolved issues and areas of concern are also summarized and identified for action. Office Director's participation continues.

Attendees for the second day are:

PPT Membership

NP-1 Program Director

NP-2 Chief Engineer

NP-3 Construction Manager

Office Director

Division Director (15:00 to 16:30 only)

5. During the time period prior to the second interaction with the division, all unresolved action items are assigned to appropriate members of the PPT for research and analysis. Upon completion of this effort, the results are documented in draft form as Issue Papers and are distributed to the membership at large for review prior to the next meeting date.

6. The second interaction with the division is a one day meeting which has two objectives. The first part of the meeting is to have the DIVDIR brief the PPT on division activities which have taken place since the first meeting and reactions to PPT comments from the previous two day meeting. NP-1 and his staff are in

attendance. The briefing occurs during the morning session, and with discussion, is scheduled to last approximately 1-2 hours. NP-1 and his staff are in attendance. At the conclusion of this briefing, the DIVDIR exits and the meeting continues. The second part of the meeting is focused on review and discussion of the Issue Papers along with any related topics and action items which are relevant. Open discussion is encouraged, and DIRNPR provides appropriate guidance.

The attendees for the one day meeting are the same as before, except the Division Director is only present during that part of the morning session when he gives his briefing.

7. All changes to the Issue Papers are incorporated and the resultant document is edited, published, and provided to NP for their use. A continuing relationship is also encouraged between designated division staff and PPT Members.

8. Toward the end of Phase 2, the Methodology was further modified by the Director, NPR, (NP-1) as follows:

- a. The observations and reactions of the PPT members from the initial two day Division meeting are formatted and provided to the NP-1 representative (M. Shapiro) within a few days of the conclusion.
- b. Recommend Division actions are also provided along with the observations and comments from the PPT membership.
- c. NP-1 subsequently meets with the Division Director, his Office Director, and the NP Executive leadership to review these comments and recommended actions from the PPT.
- d. The subsequent one day meeting is modified to include a report from the Division on actions taken as a result of the previous two day meeting.

e. A second informal report is provided by the PPT to NP-1 as a result of discussions that ensue during the follow on one day meeting between PPT membership and the NP Division of concern.

As a result, there were fewer issue papers generated from the last meetings, but there was more opportunity for interaction between PPT individual members and the NPR staff.

ATTACHMENT B

**PHASE 2
DIVISION LEVEL REVIEWS**

**QUALITY ASSURANCE
ISSUE PAPERS AND ACTION REQUIREMENTS
AND
ENVIRONMENTAL COMPLIANCE
ISSUE PAPERS**

QUALITY RELATED ISSUE PAPERS

FUNDAMENTAL

12. QA CONCEPT OF AUDITING VS GRADING.....AUSTIN
13. GENERAL APPROACH TO QA CONSIDERING
EXTERNAL BOUNDARIES SUCH AS CONTRACTUAL,
ENVIRONMENTAL, STATE AND LOCAL
GOVERNMENT COMPLIANCE, ETC.....POTTS
14. HOW SHOULD NPR QA LONG RANGE PLANNING BE
IMPLEMENTED.....SINK
15. WHO SHOULD BE RESPONSIBLE FOR
"BIG PICTURE" QA AND HOW SHOULD
THIS PHILOSOPHY BE PROMULGATED.....SINK
16. TQM RELATIONSHIP WITH NPR PROGRAM.....SINK
17. EMPLOYEE CONCERNS PROGRAM.....LAVALLEE
18. HOW TO AVOID "CHALLENGER" PROBLEM.....AUSTIN
19.KAUDERER
20.WENDT
21. WHAT SHOULD BE THE AUTHORITY OF THE
QUALITY OFFICE REGARDING "STOP WORK"
AND ASSOCIATED EXECUTION PROCESS.....KAUDERER

PROGRAMMATIC

22. SHOULD QA DOCUMENTATION PROVIDE FOR
STANDARDIZATION OF THE QAR WITH USER/TASK
SPECIFIC EXCEPTIONS OR MODIFICATION AS NECESSARY.....LAVALLEE
23. ADHERENCE OF NATIONAL LABS PROGRAMS TO NQA-1.....LAVALLEE
24. HOW FAR DOWN SHOULD NQA-1 BE APPLIED.....LAVALLEE
25. QA FEEDBACK.....BURKHALTER

26. DETAILED REVIEW AND APPROPRIATE
CLARIFICATION OF NQA-1 DERIVED QAR
DOCUMENT (REV 4/15).....LAVALLEE
27. WHICH PARTS OF THE EIS NEED TO HAVE THE
QAR APPLIED.....LAVALLEE
28. ISSUES ASSOCIATED WITH MAINTAINING SOFTWARE
INTEGRITY WHICH INCLUDES ADP/CAD/CAE/DESIGN CODES.....DAVIS
29. EFFICIENT MANAGEMENT, STORAGE, AND USE OF DATA.....WENDT

ENVIRONMENTAL COMPLIANCE RELATED ISSUE PAPERS

30. HOW TO FACILITATE AND INSTILL CREATIVE
THINKING IN THE ENGINEERING PROCESS.....SINK
31. WHAT ARE THE KEY DESIGN CONSIDERATIONS
NECESSARY TO PROVIDE THE BEST APPROACH
FOR WASTE MINIMIZATION.....LAVALLEE
- 31A.KAUDERER
32. FUNCTIONAL EQUIVALENCY BETWEEN NPR, COMMERCIAL
NUCLEAR POWER AND NAVAL REACTOR TEST GROUP.....AUSTIN
32. ESTABLISH THE FUNCTIONAL EQUIVALENT OF THE
M&O, PMO, CM, A&E, AND THE RM BETWEEN THE COMMERCIAL
NUCLEAR POWER INDUSTRY AND THE NAVY JTG IN ENOUGH
DETAIL THAT IT CAN BE EXTRAPOLATED INTO THE NPR
PROGRAM
- A.KAUDERER
- B.LAVALLEE
32. NAVAL REACTORS NEW CONSTRUCTION TESTING - THE
VIEW OF THE TEST CREW AND ITS ORGANIZATIONAL
RELATIONSHIP
- C.AUSTIN
33. WHAT SORT OF ENVIRONMENTAL COMPLIANCE
TRAINING PROGRAM SHOULD BE PUT IN PLACE WITHIN
NPR TO MEET STATUTORY REQUIREMENTS, ASSIST
MANAGERS AND STAFF IN MEETING THEIR OBJECTIVES,
AND PROVIDE A DEGREE OF ENVIRONMENTAL AWARENESS
FOR ALL HANDS.....WENDT

34. "DISCOVERY" AS AN ELEMENT OF PERMITTING
STRATEGY.....AUSTIN
36. RATIONALE AND RECOMMENDED ROLES AND
RESPONSIBILITIES FOR A DEPUTY-LEVEL
OPERATING ACTIVITY WITHIN NPR.....POTTS
.....LAVALLEE

ATTACHMENT C

PROGRAM PLANNING TEAM

CURRENT MEMBERSHIP

GEN JAMES E. DALTON, USAF (RET)

VADM EDWARD A. BURKHALTER, JR., USN (RET)

VADM BERNARD M. KAUDERER, USN (RET)

RADM ROBERT C. AUSTIN, USN (RET)

RADM ROBERT H. WERTHEIM, USN (RET)

CAPT G. FRITZ WENDT, USN (RET)

DR. RUTH M. DAVIS

DR. D. SCOTT SINK

DR. GENE G. MANNELLA

MR. ROBERT L. DICK

MR. JOSEPH C. LaVALLEE

MR. WILLIAM J. PHILLIPS

MR. E. STEVEN POTTS

DR. GENE G. MANNELLA

Dr. Gene G. Mannella is Vice President of Technology Transfer and R&D Administration for the Gas Research Institute (GRI).

He received a B.S. degree in Chemical Engineering (with honors) from Case Institute of Technology in 1953 and a Ph.D in the same field from Rensselaer Polytechnic Institute (RPI) in 1956. He performed postdoctoral research in upper atmosphere chemistry under Professor Paul Harteck at RPI from 1956 to 1960.

Prior to joining GRI in May of 1990, Dr. Mannella served as Director of the Washington Office of the Electric Power Research Institute (EPRI). From 1979 to 1983 he was Vice President and General Manager of the Stirling Division of Mechanical Technology, Inc., a high technology research and development and, manufacturing firm. Dr. Mannella was Senior Vice President of the Institute of Gas Technology from 1977 to 1979. Prior to that, he held a series of government positions in ERDA, DOT and NASA, where he was responsible for Federal programs in energy conservation, vehicle safety, and aerospace technology, respectively. He also served as Dean of the School of Engineering and Architecture at the Catholic University of America from 1970 to 1972.

Dr. Mannella is a recipient of the NASA Apollo Achievement Award and the DOT Award and medal for Meritorious Achievement.

He has authored numerous technical papers, served as chairman of two International Conferences on Experimental Safety Vehicles under NATO/CCMS sponsorship, and was head of the U.S. Section on Automotive Transport of the Joint U.S. - U.S.S.R. Technical Exchange on Transportation.

DR. D. SCOTT SINK

Dr. Sink is the Director of VPC, an international center for Quality and Productivity management. The VPC is actively engaged in research, design, development and implementation of innovative techniques to plan, measure and improve performance. In addition to his VPC responsibilities, he is an Associate Professor in the Industrial Engineering and Operations Research Department at Virginia Polytechnic Institute and State University.

Dr. Sink received his B.S.I.S.E., M.S.I.S.E. and Ph.D. degrees from the Ohio State University in 1973, 1977, and 1978 respectively. During his graduate study at Ohio State, he was Field Director for the Productivity Research Group in the Department of Industrial and Systems Engineering. This group executed a landmark, white-collar productivity measurement study sponsored by the National Science Foundation from 1975-1977. The study initiated at the application of the Nominal Group Technique for productivity measurement and improvement applications. From 1978 to 1984 he was a faculty member at Oklahoma State University and also the Director of the Oklahoma Productivity Center.

Dr. Sink has written two books on the subject of productivity and quality management and presented over 50 papers. He is an active lecturer, provider of management workshops and seminars, and consultant on the subject of performance improvement.

Dr. Sink is a senior member of the Institute of Industrial Engineers (IIE) and the Academy of Management, and a Group Vice President of the IIE. He is the recipient of numerous awards including the Haliburton Award of Excellence and the IIE Outstanding Young Industrial Engineer of the Year Award.