May 28, 1998 SECY-98-122

FOR: The Commissioners

FROM: L. Joseph Callan /s/
Executive Director for Operations

SUBJECT: ASSESSMENT OF TECHNICAL SKILLS AVAILABILITY

PURPOSE:

To inform the Commission of staff actions to develop a methodology for assessing the availability of technical skills at the NRC.

BACKGROUND:

As part of Phase II of the Strategic Assessment and Rebaselining Initiative, the Steering Committee forwarded to the Commission a direction-setting issue paper: Staffing and Core Capabilities (DSI-18). DSI-18 concentrated on five key areas which would apply to the management of human resources within the Agency. These areas are: (1) projecting skills requirements and availability; (2) staffing mission and programs; (3) training and developing staff; (4) attracting and retaining staff; and (5) managing staff imbalances. The Commission requested the staff to prepare a preliminary action plan for projecting and maintaining skills requirements, availability, and staffing, to be finalized after the strategic plan is formulated and receives Commission approval. On May 30, 1997, the staff provided a preliminary plan (SECY-97-112).

On June 6, 1997, the Commission approved a related effort, SECY-97-075, Methodology and Criteria for Evaluating Core Research Capabilities, and directed that a similar process be

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extended to NRR, AEOD, and NMSS. On October 2, 1997, the Commission approved the preliminary human resources action plan presented in SECY-97-112, with substantial comments. Among other things, the SRM requested the staff to provide a methodology for identifying core capabilities in coordination with related agency activities and schedules.

The SRM also asked the EDO, CFO, and CIO to review the need for carrying out all of the tasks included in SECY-97-112 and to determine whether a simpler approach would be feasible. The response of the EDO, CFO, and CIO was provided to the Commission on March 4, 1998 (SECY-98-037).

On May 6, 1998, the staff provided the Commission SECY-98-102, Core Capabilities, which described a methodology for determining that a capability is core and for selecting a core competency source. SECY-98-102 also provided an integrated plan and schedule for identifying core capability requirements and acquiring and maintaining the core competencies to respond to them. Development of a skills assessment methodology, the next step in the plan and schedule, is the subject of this paper.

DISCUSSION:

The staff has developed a methodology for conducting a technical skills assessment. The approach is based on the development of a technical skills survey instrument that can be used across the agency as a means for gathering data about the availability of staff to perform various technical activities (e.g., inspection, licensing) in areas specific to the NRC (e.g., operating reactors, medical isotopes). The survey also gathers data about the availability within the staff of certain technical disciplines of particular interest to the NRC.

The survey instrument has been developed by a working group from the Office of Human Resources (HR), the Office of Nuclear Reactor Regulation (NRR), the Office of Nuclear Materials Safety and Safeguards (NMSS), the Office of Nuclear Regulatory Research (RES), and the Office for Analysis and Evaluation of Operational Data (AEOD). It will be initially tested by small groups from the four technical offices to determine whether it is a useful instrument for capturing information about the availability of staff to perform core technical functions. The methodology to be used and sample survey instrument are discussed in more detail in Attachment 1.

Included in the initial implementation of the methodology will be an assessment of the staff's ability to record and manage the data collected with information technology currently available in HR. The survey results will be obtained electronically and converted into a database that will interface with human resource information developed through the new PayPers system by means of existing client-server technology. The PeopleSoft software that NRC will purchase in order to implement STARFIRE has a skills assessment module that NRC will consider implementing after the core modules needed for STARFIRE have been implemented. This step would improve the staff's ability to maintain and manage skills information.

The overall plan and schedule for the core capabilities initiative and a figure depicting the

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process are also attached (Attachment 2).

RESOURCE CONSIDERATIONS:

Implementation of this methodology has been coordinated with the respective program offices and will be accomplished within existing in-house staff resources.

COORDINATION:

This paper has been coordinated with the Chief Information Officer.

L. Joseph Callan
Executive Director
for Operations

Attachments:
1. Methodology for Assessing the Availability of Technical Skills
2. Core Capabilities Implementation Plan and Schedule

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Attachment 1

Methodology for Assessing the Availability of Technical Skills

Introduction

A methodology for assessing the availability of technical skills at the NRC has been developed as part of an integrated process for identifying core capability requirements and acquiring and maintaining the core competencies to respond to them. The first two steps are described below, and a complete implementation schedule is also provided in Attachment 2.

Step 1: Identify the key technical activities and application areas and selected specialized technical disciplines to develop survey instrument

A Technical Skills Assessment Working Group convened in May to develop a survey instrument that could be used across the agency as a means for gathering data about the availability of staff to perform technical activities. SECY-98-037 proposed testing a skills assessment methodology in selected areas in NMSS, RES, AEOD, and NRR. Representatives from these organizations met with HR staff to develop a matrix of agency activity and applications areas that could be used by staff in their organizational units to self-assess their experience. The staff has also included a survey of the availability of specific technical disciplines identified in SECY-97-075, Methodology and Criteria for Evaluating Core Capabilities. When combined with other pertinent human resources information already captured by HR (educational degree fields, occupational series, job history), the collected information could be used by agency managers to determine what staff can do as well as what they know. The survey developed by the working group follows this discussion of the methodology.

Step 2: Implement survey in selected areas in AEOD, NMSS, NRR, and RES

The Technical Skills survey will be e-mailed to 17 criticality specialists in the Division of Fuel Cycle Safety and Safeguards, the Spent Fuel Project Office, and the Division of Waste Management, NMSS; the Digital Instrumentation and Control Team (6 staff members), Division of Systems Technology, RES; 8 Operations Officers in the Incident Response Division, AEOD; and the Civil Engineering and Geosciences Branch, Division of Engineering, NRR (18 staff members).

Staff members will complete the survey, and e-mail it to their supervisors for review and comments (if provided by supervisor). Supervisors will e-mail completed survey to HR. Surveys will be scanned into a database.

Technical Skills Survey

Introduction

The NRC is considering ways to examine its core technical skill requirements to support future planning. You have been asked to participate in a pilot survey of your experience in agency activities and knowledge of selected specialized technical disciplines. The purpose of this survey is to gain an understanding of the work experiences in several smaller-pilot areas in order to prepare a future basis for gathering similar information throughout the Agency. Your perspective and your assistance in completing this survey are crucial. The information you provide will help identify technical activities, functions, and disciplines at the NRC. Official time is provided to complete the survey. Please return the completed survey to _____. Completed surveys must be returned by _____.

Part I: Activity Survey

Instructions

This survey looks at several types of functional activities applicable at NRC and numerous technical areas where the activities are being applied. Look at the activities at the top of the matrix and for each application area indicate to what extent you have applied the activity to each application area. Leave the box blank if you have no experience during the last 5 years in this area, or write 1, 2, or 3. Pick only one response for each box. In choosing your response, consider your experience during the last 5 years.

Sample:

Extent you apply an Activity to an Application Area:
Blank = No Application 1 = General Familiarity 2 = Infrequent (Performs activity 4 to 6 times a year) 3 = Frequent (Regularly occurring in your assignments)

	Activities												
Application Areas	Inspec-tion	Design Review	Licens-ing	Rule-makin g	Policy Formu-lation	Emer-gency Response	Allegation Response	Events Assess-ment	Technical Issue Research/ Resolution	Project Manage-ment	Environ-mental Reviews	Risk Assess-ment	Guidance Documents
Operating Reactors		1	3		2			3					

Space at the end of this part of the survey is provided for you to write-in activities and/or application areas that apply to you now or in the past 5 years. Please write in additional categories you feel apply and fill in each new box appropriately with a 1, 2, or 3.

After you have completed the survey, please e-mail it to your supervisor. He or she should review your self-assessment, and provide comments as appropriate. The supervisor should e-mail the completed survey to the Office of Human Resources (_____) as indicated on p.4.

Part I: Activity Survey

Fill in the appropriate box with 1, 2, 3, or leave blank.

Extent you apply an Activity to an Application Area:
Blank = No Application 1 = General Familiarity 2 = Infrequent (Performs activity 4 to 6 times a year) 3 = Frequent (Regularly occurring in your assignments)

	Activities												
Application Areas	Inspec-tion	Design Review	Licens-ing	Rule-mak-ing	Policy Formu-lation	Emer-gency Response	Allegation Response	Events Assess-ment	Technical Issue Research/ Resolution	Project Manage-ment	Environ-mental Reviews	Risk Assess-ment	Guidance Documents
Operating Reactors													
Non-Power Reactors													
Reactors Undergoing Decommissioning													
Advanced Reactors													
Renewal Reactors													
Fuel Facilities													
Mill Tailings													
Medical Isotopes													
Industrial Uses of Isotopes													
Military Radioisotopes													
Waste Management													
Fuel Casks													
Agreement States													
Transportation													

Part I: Activities
Add-on Sheet

This space is provided for you to write in activities and/or application areas that apply to you in the past 5 years. Please write in additional categories you feel apply and fill in each new box appropriately with 1, 2, or 3.

Extent you apply an Activity to an Application Area:
Blank = No Application 1 = General Familiarity 2 = Infrequent (Performs activity 4 to 6 times a year) 3 = Frequent (Regularly occurring in your assignments)

	Activities					
Application Areas						

Part II: Specialized Technical Skills
Fill in the appropriate box with 1, 2, 3, or leave blank.

Extent you apply a Specialized Technical Discipline:
Blank = Not Applicable
1 = As general background; but not directly related to recent work experiences
2 = Infrequently related to recent work experiences (used 4 to 6 times a year)
3 = Frequently related to recent work experiences (regularly occurring in your assignments)

Specialization	Usage Level	Specialization	Usage Level	Specialization	Usage Level
Thermal Hydraulics: plant transient analysis		Reactor Vessel Integrity: radiation damage/annealing		Severe Accident Risk: hydrogen distribution and combustion	
Thermal Hydraulics: code development, validation, maintenance		Reactor Vessel Integrity: NDE procedures and techniques		Severe Accident Risk: lower head integrity	
Reactor Physics: core transient analysis		Reactor Vessel Integrity: fracture mechanics		Severe Accident Risk: fission product chemistry, release and transport	
Reactor Physics: code development, validation, maintenance		Environmentally Assisted Cracking		Severe Accident Risk: code development, validation, maintenance	
Fuel Design and Behavior		Structural Integrity		Severe Accident Risk: fuel-coolant interactions	
Advanced Instrumentation and Controls: digital I&C systems performance		Behavior of Structures and Components in Response to Seismic and External Events		Severe Accident Risk: core degradation	
Advanced Instrumentation and Controls: software and hardware reliability and qualification		Radionuclide Transport and Behavior in the Environment		Severe Accident Risk: core concrete interaction and debris coolability	
Radiation Protection: radiation effects (relationship between dose and risk)		Spent Fuel: storage		Fuel Fabrication	
Radiation Protection: radiation dosimetry		Spent Fuel: decommissioning and decontamination		Fire Protection and Safety	
Human Factors and Organizational Performance: organizational performance		Steam Generator Integrity		Probabilistic Risk/Safety Analysis: methods development for assessment	

Specialization	Usage Level	Specialization	Usage Level	Specialization	Usage Level
Thermal Hydraulics: plant transient analysis		Reactor Vessel Integrity: radiation damage/annealing		Severe Accident Risk: hydrogen distribution and combustion	
Human Factors and Organizational Performance: human reliability		Mechanical Components		Probabilistic Risk/Safety Analysis: regulatory analyses	
Human Factors and Organizational Performance: training, staffing, qualifications		Electrical Components		Probabilistic Risk/Safety Analysis: guidance and standards development	
Human Factors and Organizational Performance: human-system interface and procedures		Piping		Probabilistic Risk/Safety Analysis: decision-making under uncertainty	
Nuclear Criticality Safety		Reactor Physics: non-reactor criticality calculations		Chemical Safety of Nuclear Facilities	
Uranium Enrichment Technologies		Special Nuclear Material Control & Accounting		Physical Security of Nuclear Facilities	
Environmental Impact Analysis					
Additional Specialized Disciplines					
Specialization	**Usage Level**	**Specialization**	**Usage Level**	**Specialization**	**Usage Level**

Your name: _____ Your organization: _____

How long did it take to complete this survey: _____

Supervisor's Review

☐ I have reviewed this self-assessment. Supervisor's name: _____
Supervisor's comments (if any) on employee's self-assessment:_____
_____
_____
_____

Please return this survey to: _____

By: (date) _____ Thank You

Core Capabilities Implementation Plan and Schedule

The current schedule for integrated implementation of core capability initiatives is as follows:

Phase 1 - Skills Availability Assessment

May 1998	Develop methodology, including templates for gathering, synthesizing, storing, and retrieving skills data.
June 1998	Initial implementation of methodology in selected areas in AEOD, NMSS, NRR, and RES.
July 1998	Assess the validity and utility of collected skills data.
August, 1998	Evaluate and, as appropriate, revise methodology.
September 1998	Establish schedule for full assessment of agency technical skills.
September 1998	Incorporate skills assessment activity in FY 1999 operating plans.

Phase 2 - Core Capability Requirements Identification

May 1998	Develop and issue methodology, including criteria for determining that a capability is core, and for selecting a core competency source (e.g., DOE lab, university, other contractor, in-house staff).
September 1998	On basis of updated strategic, performance, and budget planning guidance, identify technical competency requirements over budget planning period, and longer-range horizon as feasible. - determine which competencies are core. - determine competency source (lab, contractor, in-house staff). - incorporate results in budget and operating plans.
October 1998	Advise the Commission of progress and outcomes of Phases I and II.

Phase 3 - Development and Implementation of Strategies to Remedy Competency Gaps

October 1998	Identify gaps between available in-house skills and core in-house competency requirements
December 1998	Incorporate approaches formulated for addressing competency and ongoing gaps in updates of Program and Organization Operating Plans

Core Capability Process Model

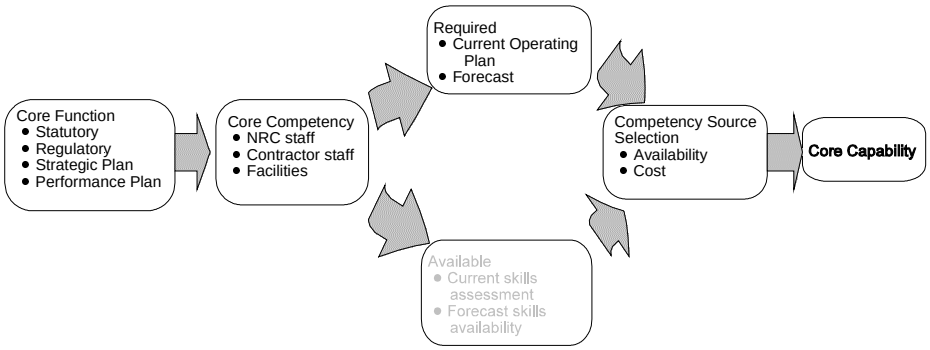

Figure 1