

Addressing the Challenges Facing the Young Generation in Nuclear

A summary of proposed actions for young professionals,
their employers, and technical professional societies

Collected by the North American Young Generation in Nuclear
at the 2004 American Nuclear Society Winter Meeting

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Introduction

At the 2004 American Nuclear Society Winter Meeting, the North American Young Generation in Nuclear (NA-YGN), in cooperation with the Operations and Power Division (OPD) of the American Nuclear Society (ANS), organized a session titled "Challenges Facing the Young Generation in Nuclear." The goal of the session was to identify the challenges that young professionals in the nuclear science and technology industries feel that they must address and discuss specific actions to begin to address these challenges. This report provides a summary of the proposed actions to be taken by young professionals, their employers and the technical professional societies to which they belong in order to enable young professionals to be more effective in their interactions with their employers, their co-workers and their communities.

1 Identification of Challenges

In order to identify the specific challenges to be discussed during the session, members of the NA-YGN were invited to participate in an anonymous internet survey on the NA-YGN web site. Participants were asked to identify the most significant challenge that they felt that they must overcome in order to maximize their effectiveness in their professional career. Participants were also asked to identify someone whom they felt could effectively facilitate a discussion of the submitted topic. Participants were not prevented from submitting multiple entries and no effort was made to assess how many submissions were received from any individual participant. In order to simplify the discussion within the session, submissions received were grouped into the following five categories:

- 1) Improving Knowledge Conservation and Transfer
- 2) Improving Recruiting and Retention of Employees
- 3) Increasing Access to Leadership and Career Development Opportunities
- 4) Improving Industry Awareness of Young Professionals
- 5) Improving Networking and Interaction Among Young Professionals

2 Proposal of Actions

With the identification of the five challenges to be addressed, proposed action to be taken by young professionals, their employers and/or technical professional societies to address one or more of the identified challenges were solicited first from the NA-YGN membership and later from the nuclear science and technology community at large. The session itself was intended to provide the forum in which the proposed actions would be collected and the potential for implementation of those actions would be discussed. However, a broad perspective was desired, so opportunities to submit suggestions were extended to those who could not directly participate in the session.

Since young professional participation in ANS National Meetings is typically limited, NA-YGN members were given the opportunity to submit proposed actions through an internet form located on the NA-YGN home page. The internet form consisted of a field in which participants could type their suggestion and two pull-down

menus in which participants selected which of the five challenges their proposed action would address and whether the action was proposed for young professionals, their employers or technical professional societies. Use of the internet form was limited, with only five suggestions received in the three weeks prior to the session at the 2004 ANS Winter Meeting.

Since two topical meetings were embedded in the 2004 ANS Winter Meeting, many sessions were scheduled simultaneously throughout the meeting. In order to allow those who were in attendance at the meeting but could not participate in the session to submit their ideas, an anonymous suggestion box was placed at the NA-YGN booth in the ANS Technology Expo. Suggestion forms included a field in which participants could enter their proposed actions and check boxes to indicate which challenge the action would address and whether the action was proposed for young professionals, their employers or technical professional societies. In order to attract participants, a prize drawing was also held at the booth with entry forms printed on the reverse of the action submission forms. Only one completed suggestion form was submitted.

In the “Challenges Facing the Young Generation in Nuclear” session, a brief introduction to the concept and goals of the session was provided by the session chair. Each of the five identified challenges was then introduced by the panelist who would be responsible for facilitating discussion of that topic. Session attendees were then asked to write down their ideas for actions to address these challenges on provided adhesive note pads and paste them on one of five posters hanging around the room, with each poster dedicated to one of the five identified challenges. Each poster was divided into three zones, with each zone designated for actions to be taken by young professionals, actions to be taken by their employers or actions to be taken by technical and professional societies. Attendance in the session varied from approximately 25 to approximately 50, with a wide range of disciplines and levels of experience represented. Approximately 130 proposed actions were collected during the session.

3 Summary of Proposed Actions

The following sections provide a summary listing the proposed actions and salient comments recorded during the “Challenges Facing the Young Generation in Nuclear” session. Duplicate comments or proposed actions were recorded only once, and similar points of discussion regarding any one of the five identified challenges were edited to reduce repetition and to improve the utility of this document. The proposed actions and points of discussion could be applied in many different ways and it is left to the reader to determine an appropriate plan of implementation.

3.1 Improving Knowledge Conservation and Transfer

Conservation and transfer of unrecorded and unarchived knowledge is a critical issue facing the nuclear science and technology industry. The reduction in workforce through the 1980's and 1990's followed by recent growth as many members of the current workforce approach retirement has led to the need to develop innovative ways to ensure continuity of expertise since the traditional industrial model of gradual attrition

may not apply. Session participants were asked to consider actions that may aid in the development of knowledge management programs and improve the effectiveness of such programs where they already exist.

3.1.1 Actions for Young Professionals

- Find a mentor within your organization
- Work to cultivate relationships with more experienced co-workers
- Work to develop useful contacts outside your area of responsibility and outside your company
- Get more training
 - *Thoroughly research your training options. This allows you to be well-informed prior to asking for management approval.*
- Participate in conferences and other professional society activities
 - *In order to get approval:*
 - Write papers
 - Ask early to allow managers more opportunities to fit participation in their budgets
 - Include conference participation as part of your career development plan that you discuss with your management
 - Be prepared to submit a business case to justify your participation in conferences.
 - Find other people in your company who participate in the professional societies and try to find synergies and ways to minimize costs to the company
 - Understand your company's strategic business or technical goals and see how to align your management's conference attendance policies with such goals.
 - Ask upfront to be considered for conference attendance opportunities after you are hired as part of your contract
- Seek out expertise and experience (and show them respect – it's flattering and they will be more willing to open up to you)

3.1.2 Actions for Employers

- Conduct regular project update meetings and brainstorming sessions
- Establish a structured Knowledge Management Program
 - Establish a mentoring program
 - Match experienced mentors with new employees to introduce them to the company
 - Match experienced mentors with recent hires to help them address the specific challenges of their job
 - Match experienced mentors with new supervisors to help them address the specific challenges of being a supervisor
 - Offer shadowing opportunities between junior and senior employees
 - Encourage regular informational presentations by experienced professionals

- Hold Brown Bag Luncheons, establish a regular seminar program, or hold special knowledge transfer / team building activities
 - Record all presentations and establish a searchable database
 - Develop a program to document “Tribal Knowledge”
 - Create thorough manuals for all undocumented computer software
 - Create searchable databases that capture ideas that did not work as well as ideas that did work
- Develop programs to encourage experienced professionals to transfer their knowledge to junior staff
 - Reduce workloads to allow time to address knowledge management issues
 - Establish rewards for participation in the knowledge management programs
 - Monetary bonuses, travel support for conference or meeting, extra vacation time
 - Include knowledge transfer responsibilities in job descriptions
 - Make knowledge transfer part of building job security rather than detrimental to job security
- Develop programs to encourage young professionals to seek out knowledge transfer opportunities
 - Establish rewards for participation in the knowledge management programs
 - Monetary bonuses, travel support for a conference or meeting, extra vacation time
 - Encourage participation in professional societies
 - Pay membership fees or support travel to conferences and meetings

3.1.3 Actions for Technical Professional Societies

- Sponsor and develop a handbook that list the different avenues to implement a knowledge management program and make these available to the industry
 - Knowledge is not consolidated in one area, consider multiple potential implementation strategies to aid companies in developing plans that will work for them
 - Provide additional justification for young professionals or managers actively seeking knowledge transfer opportunities
- Develop programs to encourage more participation in professional societies
 - Offer incentives to encourage companies to send their employees
 - Reduced registration for more than X employees from one company
 - Free corporate membership if more than X employees attend two consecutive national meetings
 - Provide free publication services to facilitate professionals sharing their knowledge
 - Establish attractive dues structures to attract student members and encourage them to remain as young professional members

- Offer zero dues and zero registration fees for ALL students.
- Offer reduced dues and reduced registration fees for young professionals

3.2 Improving Recruiting and Retention of Employees

The median age of a worker in the nuclear science and technology industry is 49 years. Approximately 50 percent of the total nuclear workforce will retire by 2014. Session participants were asked to consider how the industry should work to recruit new employees and what actions might be pursued to reduce the loss of nuclear employees to other industries.

3.2.1 Actions for Young Professionals

- Recruiting
 - Develop personal web sites that publicize the advantages of nuclear
 - Maintain contact with your university, perhaps go back and teach a course. This can give you an inside track to upcoming students who are interested in the field.
 - Take a leadership position on something no one else wants to do. Establish that you are interested in learning something new and are looking for ways to improve yourself.
 - Young Professionals must push to explore and find their own home in nuclear. There are enough varied ideas/area/focuses in this field, just be willing to let yourself find the job that fits you.
 - Form a new employees club, such as a NA-YGN local chapter, to provide a sense of community
 - Share the knowledge you've picked up with the next young professional to join your company.
 - Take responsibility for your own career and look into the many different applications of a nuclear background.
- Retention
 - Be open to creativity. There are no bad ideas because the crazy ones lead to the realistic innovations.
 - Be proactive; schedule a meeting once a month with your supervisor to discuss problems, projects and ideas. Be sure your management understands where YOU want to go with your career. No one is going to help you if you're not willing to help yourself!!

3.2.2 Actions for Employers

- Recruiting
 - Broaden the educational background targeted by your company at career fairs. Don't focus exclusively on Nuclear Engineering. Remember the nuclear industry needs accountants, maintenance workers, health care professionals, and many other types of people other than nuclear engineers.
 - Develop a rotation program that lets an employee see the range of positions with the company (technical and non-technical).

- Emphasize the value of working for your company. A Paycheck is not the only value you get from your career.
- Make sure that resumes of co-op students don't get lost in HR. That Co-op will be a possible full time employee in 4 years.
- Develop a recruitment strategy that "excites" recruits about the field.
- Ensure your nuclear company understands what the competitive wages being paid to new nuclear recruits.
- Initiate a Co-op program and identify concrete projects for students to work on that will actually be used at the company.
- Ensure new employees have access to peers of a similar age and can build working relationships readily. Ensure new recruits understand the programs offered to new employees and that they are incorporated into those activities.
- Develop collaboration between your company and a university. Provide Co-ops, scholarships and internships to foster a relationship between your company and the whole student body at that university.
- Establish an outreach program to influence students to consider the nuclear workplace after graduation.
- Increase emphasis on contributing areas that are not tied to power generation. If your company falls into this category SPEAK UP! Many graduating students don't realize the possibilities open to them with their degrees.
- Retention
 - Listen to employees. Even small concerns are important to the concerned party.
 - Have dual career paths so engineers can achieve management level salaries without having to enter management. Many engineers do not want a managerial position, but they do want to feel that their technical expertise is valued in the same manner as someone with managerial skills.
 - Identify projects for co-op students that add value to your company. If a co-op is hired by your company consider the impact to the perceived value of their co-op work as a new young professional in your company.
 - Introduce exciting perks to average jobs e.g. support conference attendance, allow travel, have them meet with customers, etc... The more exciting you keep it, the less likely they will leave you.
 - Employees rarely cite salary as a concern that affects retention. Ensure the new employee feels engaged and a part of the team.
 - Develop flexible work schedules.
 - Establish a group of young professionals in the organization to coordinate social and business related activities for the group (i.e. NA-YGN).
 - Keep careers exciting, allow mobility within companies.

- Develop a “fast track” program for the best and brightest. This allows for more career mobility in different divisions and more advancement opportunities.

3.2.3 Actions for Technical Professional Societies

- Recruiting
 - Engage young professionals and students with sessions geared toward those groups at the professional society meetings.
 - Technical Societies need new ideas to provide value to students and young professionals to join.
 - Encourage students to act as co-chair during a session at a national meeting. Have this co-chair introduce one or two speakers.
 - Bring young professionals into the technical society by inviting them in early and have them review papers. Review their comments and ensure they know that their opinions are valid.
 - Convince the private sector to team with DOE to fund high profile technology demonstration projects such as the GEN-IV project & nuclear hydrogen production.
 - Convince universities to spend individual time with students and professors.
- Retention
 - Engage young professionals and students with programs and successes geared towards those entering the industry.
 - Establish a campaign to get more NA-YGN groups on campuses and into companies.

3.3 Increasing Access to Leadership and Career Development Opportunities

Since many young professionals find themselves entering a workplace with many senior personnel, opportunities to establish and develop leadership skills or participate in career development activities may be limited. Session participants were asked to think about what defines an ideal leader and what barriers one must overcome to achieve the goal of becoming an ideal leader. Participants were then asked to propose actions that might be taken to become an ideal leader or to overcome the barriers that might prevent such development.

3.3.1 Actions for Young Professionals

- Plan and execute your career progression
 - BE FLEXIBLE! Adjust goals to environment
 - Invest in learning needed skills
 - Take advantage of organizations like American Management Association
- Be sure that your management is aware of your interest in leadership or career development opportunities
- Learn to communicate to various audiences

- Ask for rotational assignments
- Take an opportunity that you're not sure you can do
- Change jobs or companies if management is not responsive to your concerns
 - Be ready to follow-up on your statements

3.3.2 Actions for Employers

- Assign young professionals to assistant positions in project management or leadership roles in minor projects to gain confidence
- Encourage employees to meet in round table format
- Establish a 3 yr management development program for young employees
- Establish career mentoring program
- Describe opportunities to your employees
- Create an open door environment that welcomes young professionals ideas
- Provided funded participation in research projects
- Talk to YPs about what skills they want

3.3.3 Actions for Technical Professional Societies

- Provide guidance to both students and young professionals
 - How to develop a quality application for employment
 - Questions they should ask their future employers
- Provide non-technical professional development workshops
- Create long term mentoring programs (mentor and protégé may have different technical interests, but share non-technical interests...)

3.4 Improving Industry Awareness of Young Professionals

Degree programs and formal training typically focus on gaining fundamental technical or scientific knowledge with little emphasis, if any, placed upon maintaining industry awareness. Industry knowledge is often only relevant for a short time, so developing an awareness of one's industry is necessarily a career-long effort, especially since one's first job will likely be much different than the one from which he retires. Session participants were asked to propose actions that may be taken to encourage and enable young professionals to become students of their business.

3.4.1 Actions for young professionals

- Join a professional/technical societies
 - Get involved with the appropriate technical division and/or committee
 - Get involved in a local chapter/section of a technical society
 - If there's not one near you start one
- Attend annual conferences
 - See section 3.1.1 for hints on how to simplify getting approval from your management
- Make it a priority to keep up with industry news
 - Read technical society publications like *Nuclear News*

- Subscribe to headline services like those offered by the American Nuclear Society
- Read the U.S. NRC Daily Event report
- Read the NEI Overview
- Don't get lost in your area of focus, try to maintain a view of the big picture.
- Ask questions!

3.4.2 Actions for employers

- Bring industry updates into new hire training
 - Follow up orientation with updates periodically
- Establish meetings for management to meet with young professionals and share industry and company updates
- Make professional society participation more attractive and visible
- Seek regional collaborations with other companies and establish web-based tools to encourage this interaction
- Encourage tours of plants, research and manufacturing facilities
 - Send new employees along with experienced employees
- Provide lists of available opportunities to all employees

3.4.3 Actions for Technical Professional Society

- Sponsor a task force to find out why young professionals aren't joining Technical Professional Societies
 - Ask employers why they're not sending young professionals to National Meetings
 - Ask why student members do not renew their membership
- Many reasons for lack of young professional participation are often cited, although no formal study has been completed
 - Young professionals no longer have the help that students get after graduation
 - Companies do not provide funding to send young professionals to conferences
 - Technical professional societies do not universally offer scaled or lower fees for membership and conference registration for young professionals
- Have technical divisions sponsor young professionals to participate in division activities
- Create mailing lists for people with similar interests
- Host regional meetings in place of or in addition to national meetings
 - Balance meetings to minimize loss of networking benefits provided by national meetings
 - Organize "current state" workshops that are smaller, shorter, less formal, and less intimidating than national meetings
 - Include social events that are attractive, and cost effective, to young professionals in addition to technical activities

- Organize tours on a regional basis of plants, research facilities, manufacturing facilities, etc.
- Devote section of newsletter to young professionals
 - Many current articles assume a level of knowledge and can be dense. Devote a section to big-picture knowledge
- Headline services are very useful and should be advertised heavily among students and young professionals
- Work with universities to make room in coursework and provide teaching materials to focus on current industry events

3.5 Improving Networking and Interaction Among Young Professionals

The development of good networking skills is essential to a successful career. Furthermore, contacts developed early in one's career often remain among the most useful throughout. Session participants were asked to propose actions to encourage and enable young professionals to improve their networking skills and interact more effectively with other young professionals.

3.5.1 Actions for Young Professionals

- Utilize industry experience
 - Stop and think if someone else has already faced/addressed your problem
 - Take advantage of internet information to identify people who can be helpful to you
 - Identify and contact your counterparts in other organizations before problems occur
- Interface with peers
 - Develop a web game based on current activities
- Attend national meetings
 - Include networking as a part of business case for going to meetings
- Make a business card into a contact
 - Note what you talked about on back
 - Contact people who give you cards
 - Give out your own cards
- Read weekly publications such as NEI overview
- Involve experienced professionals in young professional networks/groups

3.5.2 Actions for Employers

- Form young professional groups to support one area of a company's business; others will likely follow
- Promote interaction across subject areas within your company
 - Publicize lessons learned
- Train young employees to network more effectively
- Integrate students into industrial lab opportunities
 - Co-ops, Internships

- Seek regional collaboration among young professionals & develop web resources to encourage interaction
 - Web forums, discussion boards, list-servs, web logs
- Send younger employees to society meetings, professional development seminars, and conferences; realize the investment in the employees is worthwhile
- Encourage experienced professionals to interact with young professionals
 - Establish mentor programs to enable and encourage networking
- Utilize networks of young professionals for recruiting

3.5.3 Actions for Technical Professional Societies

- Develop seminars geared toward less experienced engineers
 - Introduction seminars for issues and technical subjects
- Reduce costs for young professionals to join societies and attend conferences
 - May help reduce financial impact on management and encourage more attendance
 - Young professionals know how to make things less expensive for themselves – sell that to your management
- Create forums to communicate with each other and the public
 - Facilitate networking forums for a wider variety of age groups
 - Plan social events (local, regional, international) and community involvement events
- Use Blogs, list-servs and forums to communicate about success stories
 - Share what works AND what fails
- Encourage universities to build room into the academic curriculum to allow co-ops without forcing students to stay in school for additional semesters.

4 Conclusion

This report provides a summary of proposed actions collected during a session organized by the North American Young Generation in Nuclear in collaboration with the Operations and Power Division of the American Nuclear Society at the 2004 ANS Winter Meeting. This report is intended to be a resource for young professionals, their employers and technical professional societies in the development of programs to address the challenges facing young professionals in the nuclear industry. Specific plans for the implementation of these proposed actions are left to the young professionals, employers or technical professional societies who are working to address these challenges.