

**ASSOCIATE AND PROJECT SCIENTIST REVIEW COMMITTEE
FINAL REPORT
July 10, 2002**

Introduction and Context

On January 5, 2001, NCAR Director Tim Killeen asked an internal UCAR committee to review the policies and practices in the organization related to Associate and Project Scientist job families. Specifically, the charge to the committee was to:

Review the existing policies and practices in the Associate Scientist and Project Scientist appointment processes, their consistent application across the institution, promotion within the job categories as well as across other scientific job categories, and any associated mentoring and staff development issues. The committee will issue a report summarizing the conduct of the review, and will present recommendations for any changes in policies or practices that the committee deems appropriate.

The committee members were selected to be broadly representative of the overall organization (including representation for the UCAR Office of Programs), and also to represent a broad range of perspectives and interests in this particular subject. Members were selected individually, and were not considered to be "representing" their home program or division. Members of the committee are:

Steve Dickson, NCAR Directorate, Chair
Wendy Abshire, COMET, Associate Scientist III
Michael Coffey, NCAR ACD, Senior Scientist
Al Cooper, NCAR ASP, Senior Scientist
Jimmy Dudhia, NCAR MMM, Project Scientist II
Holly Gilbert, NCAR HAO, Associate Scientist II
Steve Oncley, NCAR ATD, Project Scientist II
Marcia Politovich, NCAR RAP, Project Scientist III
William Spatz, NCAR SCD, Project Scientist I
Susan Schauffler, NCAR ACD, Associate Scientist IV
Dennis Shea, NCAR CGD, Associate Scientist IV
Stan Solomon, NCAR HAO, Project Scientist III/Scientist III
Morris Weisman, NCAR MMM, Scientist III
Robert Roesch, UCAR Human Resources Director, ex-officio

Note: Joan Burkepille, NCAR HAO was originally appointed to the committee, but was unable to participate in the meetings.

This report is divided into the elements of the charge. Within each section, we have identified issues of relevance, and in most cases offered possible solutions. Actual recommendations are highlighted as they occur in the text.

Summary of Key Findings

1. The project scientist position serves a useful purpose for the organization and should be retained. We offer some suggestions for ways to clarify its special role relative to other positions, but we do not support elimination or major redefinition of this position.
2. The organization should move in the direction of more consistent use of the project scientist position. There is value in flexibility, and it is reasonable to have different uses for the position in different parts of the institution. However, in several regards (specified in more detail later) we think a move toward more consistency is needed. In particular, the clarification of the "Ph.D. or equivalent" qualification for a project scientist needs definition and consistent interpretation.
3. The associate scientist position should be considered a person-based position, as are scientist positions, with a career path leading to promotion through the ranks of this position. However, the project scientist position should remain job-based because this character is inherent in the definition and in most uses of this position.

The key distinction between the roles of project and associate scientists, in our view, is that project scientists are hired to meet the needs of a specific project or set of projects requiring the talents of a Ph.D. scientist while associate scientists are hired to meet more general needs for scientific support not necessarily requiring Ph.D.-level scientists. The distinction between project scientist positions and "ladder" scientific positions is that project scientist positions, while requiring Ph.D.-level scientific expertise, are more task-oriented than is appropriate for a regular scientific position and therefore may not provide adequate opportunities to meet the expectations of a regular scientific appointment (e.g., in regard to publications, leadership, original research contributions, or community service).

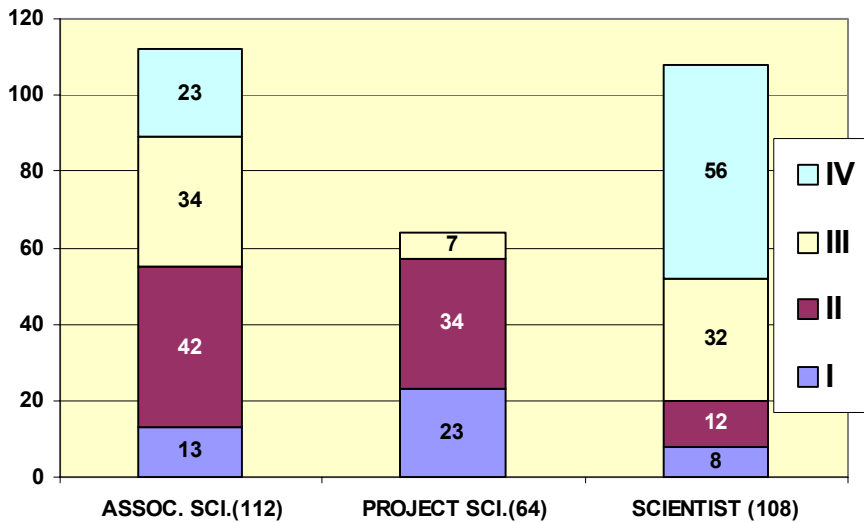
Suggested change (3) above would mostly formalize current practice, because in most cases associate scientists are reclassified to higher ranks when their qualifications justify this. Making project and associate scientist positions differ in this regard would help clarify the distinction between them, and would also help combat the tendency to regard the associate scientist position as less desirable.

Additional more specific recommendations that implement the general philosophy summarized above will be presented in the following discussion.

Demographics

The committee obtained some demographic data from the HR system. For purposes of our review, we took the staff that was on board on November 1, 2000 as our study group. The staff in the various categories on that date are shown in Figure 1.

**Figure 1.
UCAR Scientist Demographics by Job and Level
November, 2000**



The incumbents in these positions are a mixture of long-term employees and recent hires. Of the 64 Project Scientists shown in Figure 1, 39 were already UCAR employees on January 1, 1997, when the Project Scientist job family was created. Of these 39, 14 had been Visitors, 4 were Post-Docs or GRAs, 14 were Associate Scientists, 6 were Scientists, and one was "other." The remaining 25 Project scientists on board on November 1, 2000 were hired since January 1, 1997. Of these 25, 14 were Project Scientists I as of November, 2000, 10 were Project Scientists II, and 1 was a Project Scientist III.

Of the 112 Associate Scientists shown in Figure 1, 69 were on board on January 1, 1997, and 43 were hired since that date. Of the 69, 4 were Associate Scientists I as of November 2000, 16 were Associate Scientists II, 27 were Associate Scientists III, and 22 were Associate Scientists IV. Of those hired since

January 1997, 9 were Associate Scientists I by November 2000, 26 were Associate Scientists II, 7 were Associate Scientists III, and 1 was an Associate Scientist IV.

Of the 108 Scientists shown in Figure 1, 97 were also on board on January 1, 1997. 6 were Scientists I on November 1, 2000, 10 were Scientists II, 29 were Scientists III, and 52 were Senior Scientists. Between January 1, 1997 and November 1, 2000, 11 Scientists were hired: 3 were Scientists I on November 1, 2000, 2 were Scientists II, 4 were Scientists III, and 2 were Senior Scientists.

These statistics indicate that:

- The majority of the present project scientists were UCAR employees when the new job category was created. Many were moved to that position from associate-scientist or visiting-scientist positions. The rapid growth of this number of employees in this job category suggests that it has met a need of the organization.
- About 1/3 of each category (project and associate scientist) were hired in the approx. four-year period after the project scientist category was established. In particular, the establishment of the project scientist position did not curtail new hires into the associate scientist position.
- There were few hires into the scientist ranks, especially at the entry level, in this period, but many more into the project scientist ranks. This is a warning indicator that project scientist positions might have been used in cases where it would be appropriate to consider regular scientific appointments.

Current Practices

Most members were surprised to learn that there really are not any "policies" *per se* regarding the Associate Scientist and Project Scientist job families. As a matter of fact, the Scientific Appointments Policy 2-2-1, does not even mention that these other scientist job families exist. Our review disclosed a one page memorandum to all UCAR staff dated January 3, 1997 that established the Project Scientist job family. (Attachment A). We also reviewed the Job Matrices prepared by HR as part of the Job Evaluation Project several years ago. These matrices are attached to this report (Attachment B). The matrices identify the job responsibilities and experience requirements for each level in each of the job families. Most committee members were not aware that these matrices existed. We think it is a helpful step that these matrices are now available via the internal HR website. We also think it would be helpful if Attachments A and B were explicitly accessible through inclusion in the Scientific Appointments Policy 2-2-1, so that all three scientific job types are defined in the same place. This could facilitate intercomparison of these job types for both management and employees.

To understand the range of real or perceived practices, the committee conducted an informal survey in which the committee members described how the project and associate scientist positions are used in their divisions and programs. The result was that there appeared to be considerable variability in how the project-scientist appointment is used, or at least is perceived to be used, in regard to these aspects:

- Use of term appointments. In some divisions/programs, all project scientists are in term appointments; in others, almost none are. This reflects the use of project scientists in some divisions/programs in roles that are matched to specific projects, vs. their use in other divisions/programs (notably RAP and ATD) to meet ongoing needs to support a variety of projects within the division.
- Publication frequency and expectation for project scientists.
- Frequency with which project scientists serve as PIs or serve in management roles on projects.
- Use of "ladder-type" promotion through ranks of the project scientists. While there is formally no promotion within this job category but only movement to a new job (i.e., it is job-based), in practice there was a sense that promotion through the project-scientist ranks was an expectation in some but not all divisions/programs. There was considerable uncertainty about this, reflecting that expectations in this regard are not clear among project scientists (and until recently most did not understand the job-based nature of their position).
- Some NCAR divisions have chosen not to use the Project Scientist III classification at all.

In regard to associate scientists, the major variations among divisions and programs were these:

- The fraction of associate scientists with PhDs ranged from 0 to about 50% among different divisions/programs.
- There was considerable variability in the extent to which associate scientists have project-management duties. Some divisions/programs consider associate scientists to be in an assisting role, helping other scientists with their work, while in others associate scientists conduct independent research and publish the results on their own.
- There was some sense that both the associate and project scientist positions are occasionally used or have been used as alternatives to the promotion "ladder" requirements of the regular scientist positions.

This variability across the institution is not necessarily an indication of a problem. UCAR has traditionally striven to be as flexible as possible in its personnel policies and practices. Recognizing the inability to regiment the scientific activities, it has been considered prudent to provide only gentle guidance for application of most scientific appointments and other personnel practices. In that traditional environment, classes of employees were seldom viewed by job class across the entire organization. This tradition logically has led to variations among

the programs and divisions. However, problems can arise when incumbents in these positions see variations in practice without understanding the reasons for these differences.

Practices in the divisions and programs do vary. In some divisions/programs the work of some Associate Scientists could appropriately be assigned to software engineers - or programmers, if there were such a category. Some divisions/programs consider Associate Scientists to be in an assisting role, helping Scientists with their work, while in other divisions some Associate Scientists conduct independent research and publish the results on their own. Some Project Scientists are on term appointments on specific projects, funded by contracts or grants, while others are without term and move from one project to another. Most of these differences are within reasonable interpretation of the HR matrix descriptions. There are, however, some issues that should be addressed. These issues are discussed below.

Funding Source and Term Appointments When the Project Scientist job family was established, there was considerable discussion about whether appointments to this category would have to be for specified terms. Some members of the committee feel strongly that Project Scientist appointments should be limited to projects of finite duration, at the end of which the position terminates. That argument is always accompanied by the assertion that these projects must be other agency, or special funded, that is, non-base supported. Some divisions/programs are currently operating within that kind of framework. While the committee cannot attest to what the group that devised the job family might have been thinking, it is reasonable to assume that if those features were a requirement, the job matrices would so state. At this time, no position or job in the organization is defined by the source of the funds that support the position. Also, there is no requirement that any Project Scientist position be on term appointment. Certainly agency-funded finite projects may employ Project Scientists with appointment terms that coincide with the project duration. But neither the funding source nor the term appointment are requirements.

PhD or Equivalent The Project Scientist family requires that a person have a "PhD or an equivalent level of experience." There does not appear to be a clear policy statement of what experience would reasonably be expected to be sufficient to meet this requirement. A guideline to determine "equivalency" would be extremely useful to everyone, including employees in career planning, hiring supervisors and managers, and to HR in evaluating and placing positions in the system. An ad hoc advisory committee (Al Cooper, Bob Gall and Michael Knölker) for a Project Scientist promotion, in an 11 August 2000 memorandum to Tim Killeen and Bob Roesch suggested the following:

... we suggest the following three requirements be considered an alternative to a PhD degree for the purpose of a Project Scientist (or Scientist) appointment at any level:

- 1. A Masters degree and experience past the Masters level that has led to published research (which might typically extend over a 10-year period);*
- 2. Thematic development of some area of research to a level comparable to that expected in a PhD research project;*
- 3. Demonstrated expertise and general experience comparable to that expected from PhD course work.*

The committee endorses this suggestion, and supports the use of this definition.

Recommendation: Specific guidelines to determine PhD equivalency should be adopted and made available to employees and managers.

Vacation Accrual Rates Project Scientists receive 2 vacation days a month, starting at their first day of employment. Associate Scientists receive 1 day per month for their first two years, 1 ½ days per month for years 2-8, and 2 days a month thereafter. The committee did not come to agreement on whether this policy should be changed. In general, the committee felt that it would be desirable for policies to treat scientists consistently, but recognized the problems associated with changing this provision. A majority felt that at the Associate Scientist III and IV level, the two days per month accrual would be appropriate.

NCAR vs. UOP UOP programs generally have Associate Scientists and Project Scientists. However, there are no Scientists in UOP. This apparently is due to the fact that the Scientific Appointments Policy is considered an NCAR policy and applies only to NCAR. Since there are no "core" funds in UOP, it has been considered that PhD scientists are Project Scientists, particularly because the nature of their work generally does not easily provide for publication. Some members of the committee feel that perhaps there should be a separate job family for UOP scientists to address the unique UOP situation, as a way to clarify and hone in on the specific NCAR situation. Some feel that the appointment process and the creation of the Project Scientist family were "NCAR centric" and took no account of UOP requirements or desires. Overall, the committee has concluded that the existing job families can be interpreted broadly enough to continue to serve the requirements of UOP as well as NCAR.

Use of Postdoc Appointments for Project-Scientist Functions. Because the "postdoctoral fellowship" appointment is paid at a significantly lower level than the lowest paid project scientist, there is some inducement to use postdoctoral appointments to meet project needs. This is inconsistent with the "fellowship" nature of the appointment (the only kind of postdoctoral appointment defined in UCAR policy). It is also inconsistent with recommendations of recent national

(e.g., by the National Academies of Science and by the Association of American Universities), who have recommended that postdoctoral appointments should be primarily educational in nature. Nevertheless, there is often value (both to the scientist and to UCAR) in hiring a new Ph.D. scientist to contribute to a project.

The budget pressure to hire a postdoc could be relieved if there were an appropriate level with salary comparable to that of a postdoc, or at least significantly below the present Project Scientist I level. Alternately, UCAR could establish a category of scientific visitor, another category of postdoctoral appointment, not called a fellowship, that could be used for this purpose. However, the latter approach would not be consistent with the NAS/AAU recommendations and could lead to loss of prestige of the regular postdoctoral fellowship programs in ASP, HAO and VSP.

Recommendation: The Postdoctoral Fellowship position should not be used inappropriately. An appropriate appointment category should be identified to meet this need. This category should be used only for term appointments of not more than two years.

These appointments would be suitable for hiring recent Ph.D. graduates. They should be used instead of postdoctoral appointments when the purpose is primarily to achieve project objectives rather than to further the education of the scientist.

Promotion Within and Across Scientific Job Categories

The committee debated at length a number of situations or issues that can best be discussed within this section on promotion. The most significant among these are those addressed below.

Job-Based vs. Person-Based

The position classification system at UCAR includes two differing philosophical models. Job families are considered to be either "job based" or "person based." In a job-based environment, the classification of an incumbent is determined primarily by the actual content of the job. A position is determined to be at a certain level based on the content of the job and its fit with the appropriate job matrix level. For example, an individual position may be classified as a Project Scientist I on that basis. Salary movement of an incumbent within the Project Scientist I range is based on expertise and merit. Movement of the incumbent to a Project Scientist II level would be dependent on changes in the job content, leading to a reclassification. Or, with the necessary skills and experience, the incumbent could apply for a different position, classified as a Project Scientist II. The "project," or tasks that need to be done dictate the compensable value of the position. So movement through the levels must be primarily determined by job

requirements and work assignment. At this time, all UCAR positions are considered job-based, except for Scientist.

In a person-based job environment, progression through the steps in a job family is determined primarily by the personal ability, growth and performance of the incumbent. For example, a Scientist I may be promoted to Scientist II upon accomplishment of the performance and experience requirements of the Scientist II classification. A person does not "change jobs" to move from one step to the next. This environment clearly lays out a career ladder, and an outstanding performer reasonably expects to move through the ranks, based on his or her own efforts. Only the Scientist job family is considered to be primarily person based at the present time.

It was quite enlightening for the committee to hear of this distinction, which for many was their first exposure to this concept. It is clear that the concept has not been widely known or accepted in the organization. For example, the committee's survey cited above disclosed that all divisions and programs treat the Associate Scientist job family as a person-based ladder.

It is the conclusion of the committee that in most NCAR applications the Project Scientist is intrinsically a job-based, non-ladder family. The very concept of a project is task, or job, based. On the other hand, the committee finds that Associates Scientists do, in practice, proceed up the ladder from I to IV, and that the Associate Scientist job family should formally be considered to be primarily person-based. The committee recognizes that this could create potential for problems in implementation, relative to other job families, such as Software Engineers. The committee noted the HR caution that all jobs are a mixture of person based and job based. Of course a person's performance and skill affect the reclassification to a higher job level in a job-based family, and the requirements of the job (and how they evolve) affect the promotion to a higher level in a person-based job family. But one or the other is the primary consideration.

Recommendation: Associate Scientist job family should be changed to a person-based philosophy. Criteria for promotion and a process for handling movement through the Associate Scientist levels should be developed and incorporated into the Scientist Appointment Policy.

Recommendation: Project Scientist job family should remain job-based.

PhD vs. non-PhD in Associate Scientist Positions

A significant fraction of the Associate Scientists possess a PhD degree, although that is not a requirement of these positions. There is some concern among Associate Scientists who do not hold PhDs that those who do are preferentially

treated in promotion and in job assignments. To some extent, in this organization, preferential treatment of PhDs is the norm, and may just be a fact of life in an academically based research environment. In some cases, PhDs on the Scientist ladder may be appointed to an Associate Scientist position at a high level (III or IV). This further restricts the career opportunities for non-PhD Associate Scientists, even if they fully meet the requirements of the position. The committee considered a remedy to this condition that would create a fourth scientist job family, but on balance decided to try to address this issue through other means. Actually, the treatment of Associate Scientist positions as person based helps alleviate this imbalance.

PhD Equivalency as a Factor in Promotion

The committee discussed that there is no apparent way that an individual can request to be designated as a PhD Equivalent. In the normal course of events, such a determination is made when considering whether an applicant for a Project Scientist or Scientist position is qualified for the job. This puts the applicant in the position of having to prove "worthiness," often in a competitive situation, to a hiring manager. One seldom receives any feedback on whether he or she was actually considered equivalent. This is particularly frustrating in the current environment, where there is no definition of what constitutes equivalency. There is also a feeling as expressed above that all the PhDs get considered first. The most evident way a person can be determined to have attained equivalency is to be hired into a Project Scientist or Scientist position that requires PhD or equivalent.

Appointment to Project Scientist III

The memorandum that established the Project Scientist job family (Attachment A) contained the following sentence:

"Level III in the new matrix will be reserved for Project Scientists at the highest level, and will require review by the Director of NCAR or the Director of UOP."

This statement acknowledges that the Project Scientist III position is comparable to a Scientist III in experience and salary level, and that it is not an automatic "promotion" from Project Scientist II. In fact it is not a promotion at all in the career ladder sense, since as a job-based position, a movement from II to III is a job content-based reclassification, not a promotion. Adding to this issue, the committee was informed that a nomination and review process for appointment to Project Scientist III had been established in March, 2000. The document detailing this process is included as Attachment C. The process in these guidelines are primarily person-based, once a need for a Project Scientist III position has been established. Consequently, the process, while intended to emulate the Scientist III process, but with somewhat less vigor, may need to be revised to acknowledge the job-based nature of the Project Scientist III position. Project Scientist requirements should be dictated by the job requirements of the

project . If the project requires the expertise and senior skills of a Project Scientist III then the position should be established. Qualified persons, included but not limited to Project Scientists II, can apply for the position. If the requirements of the project increased from a level requiring a Project Scientist II to a level requiring a Project Scientist III, a qualified Project Scientist II could be reclassified to that level.

Interface with Scientist Ladder

The committee charge also included looking at "promotion across other scientific job categories." It is not possible to fulfill this requirement without addressing issues related to the Scientist ladder. A good deal of the issues discussed above are either caused or exacerbated by the consequences of the "up-or-out" clock in the scientific appointments policy. Persons have "stepped off the ladder" or "stopped the clock," voluntarily or of necessity in order to avoid the appointment threshold, primarily at the Scientist III level. Often, these staff members become Associate Scientists or Project Scientists. If it is desirable to facilitate migration across scientific job families, it should, in the committee's judgment, be facilitated in both directions. It is possible at the present time for a Project Scientist or Associate Scientist to be "promoted" to a Scientist position. In fact, two members of this committee have experienced that transition - one actually during his tenure on the committee. But it is not a common practice. Some committee members feel strongly that any action that reduces the vigor of the Scientist ladder "tenure track" process is well beyond the scope of this committee. Others feel that the "clock" issue is so fundamental that it overshadows most of the remaining concerns. This topic was also raised by the APS panel last year, and is a continuing issue in the university community. In fairness, this committee is not properly constituted to resolve this issue, but it is possible to identify it and highlight the issue for disposition by the management. The committee fully understands and appreciates the far-reaching implications of even opening this subject, but feels that it must be addressed.

Mentoring and Staff Development

Discretionary Time

We believe that all scientists, regardless of level or flavor of the scientific appointment, should have some time available to use at their own discretion. This is necessary for professional development and to fulfill normal needs to pursue ideas, think, interact with other scientists, and otherwise support the community obligations of a scientist. A conflict can arise, for example when a project scientist is fully funded by a grant, if support for these activities of a scientist is not considered legitimate use of the grant.

We suggest that all scientists (postdoc, project scientist, associate scientist, and regular scientist) must have some time that they can budget at their own discretion. This may be only (10%?) in some instances, but at least this level

should be available to everyone in these appointments. That provides them with the flexibility to attend conferences for professional development, read journal articles not related to their project, participate in divisional and institutional activities, or investigate topics outside their immediate project needs.

In most cases, this would recognize (and legitimize) current practice. However, this needs to be provided in formal ways. An extreme position would be to require budget allocations at least at (10%?) levels from core funds whenever a project (or any other) scientist is hired, to support these activities. Alternately, it can be part of the understanding with the funding agency that this fraction of funds provided is an "overhead" required for general support of scientific staff. This step would relieve the pressure felt by some (including some in scientific appointments that are fully funded by outside grants) who feel obligated to spend all their available time working on grants because that is what they must say they have done on their time cards.

Recommendation: Establish a mechanism for providing all scientists at least (10%) discretionary time to use in scientific activities of their own choice.

Communication and General Understanding

Many of the issues underlying the establishment of this committee were either caused or exacerbated by the lack of accurate understanding and/or communication of the current policies and systems - by both the scientists themselves and by the managers and directors of the divisions and programs. This has, not surprisingly, led to most of the inconsistency in application noted by the committee. This situation, however, has taken a dramatic turn on several fronts:

- The committee feels that the continued focus of the Early Career Scientist Assembly (ECSA) on appointment and promotion issues has substantially contributed to wider and deeper understanding of the issues and expectations on the part of both the scientists and the management (and certainly on this committee as well). The ECSA has also offered to hold a workshop/forum on this report and its recommendations.
- Since the committee began its work, management has established an expanded mentoring and staff development program, focused on career planning and five-year career planning goals. If the issues addressed by this report are dealt with, employees can utilize these programs to plan their career with a good deal more clarity than has been possible to date.
- An initiative to develop and improve the management skills and tools of the organization has begun since the committee began. Again, a definitive management response to the issues addressed by the committee in this report could provide a needed baseline level for current and future managers.

There is one additional point that needs to be addressed in the context of the work of this committee. The management, perhaps assisted by efforts such as this committee, can devise and operate appointment and promotion policies and practices. However, the management cannot be expected to assume responsibility for each person's career accomplishment. This is fundamentally in the hands of the individual, working within the defined system and rules. It is therefore a management responsibility to provide clear definition of the rules and to apply them in a clear and consistent manner. These rules can then provide a framework within which careers are pursued and realized.

One closing recommendation, having to do with implementation:

Recommendation: After whichever of the recommendations of the committee have been implemented, a mechanism should be developed to review all affected positions to ensure that individuals are appropriately classified under the clarified or revised policies or guidelines.

End of report