Review of Integrated Safety Management

and

Enhanced Work Planning

at the

National Synchrotron Light Source

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I.   Purpose

This review was conducted to determine the understanding of NSLS personnel with regard to the application of the core functions and guiding principles of Integrated Safety Management (ISM) within the NSLS operating program.   The review was intended to accomplish two objectives: 1) assess understanding of work planning requirements across a broad cross-section of Department staff, and 2) determine gaps or weak spots in department comprehension of Integrated Safety Management in general.

II.   Introduction

In August 2004 a NSLS worker performing routine maintenance on an electrical device received an electrical shock while removing a cooling water hose. Although there were a number of issues contributing to the event, the incident was viewed as a significant breakdown in the work planning process. The overall corrective action plan established to address the issues raised by the incident included a subsequent review to determine how well work-planning requirements were understood by department personnel following completion of other corrective actions. This survey is intended to satisfy that corrective action.

In addition, during 2006 the Laboratory is preparing for a major DOE review of ISM implementation scheduled for the first quarter of 2007. Each department is expected to prepare a plan of action to improve ISM implementation. This survey was designed to assess department understanding of all the core functions and guiding principles of ISM in an effort to identify weak spots to guide preparation for the DOE assessment.

The survey was performed in collaboration with the NSLS DOE Facility Representative.

III.   Description of Process

A 15-question survey instrument (see attachment A) was prepared by the ESH/Q Section with support from the NSLS Work Control Manager and the NSLS DOE Facility Representative. A total of 30 NSLS staff members or users chosen across a wide cross-section of the department were selected for interviews. The distribution of workers interviewed was as follows:

Engineers – 5
PRT Scientists – 3
Science Associates – 3
NSLS Scientists – 5
Technicians – 7
Tech supervisors – 7

Four two-person interview teams were formed - one team conducted all the interviews within a job classification for consistency of the interviews within a group. Answers were evaluated during the interview by the team on a scale of 0 – 5 where 3 indicated an adequate answer and 5 represented a "perfect" answer. The components of the perfect answer had been prepared in advance so that the interview team could note the nature of the response as the answer was provided. In addition, the interview team sought to capture any comments made by the interviewees in an effort to provide additional feedback on the thoughts of the workers and each team provided a set of comments at the end of the process.

The scores on each question together with recorded comments from those interviewed and those doing the interviewing were placed in a spread sheet for summary and analysis. An abbreviated version of that spreadsheet with all personnel identifying references removed is included here as Attachment B.

IV.   Discussion of Data

This exercise resulted in the three sets of data described above; numerical question scores, comments recorded at the interviews and comments from the interview teams. The conclusions summarized below were drawn from analysis of each of these data sets with an understanding that all the information collected has a subjective component.

Using several interview teams both complicated and enhanced the results. Some consistency in the scoring and interview approach was lost, but the insight of a larger group involved in the process was gained. It was determined that having more people involved was best for this collection of feedback. The interview groups met before and during the process to share information and provide consistency. The same set of questions was used by each interview team and each team sought to establish a relaxed discussion with those interviewed. Interviewers explained the intent of each question in familiar terms to help gather complete responses.

A summary of the salient findings organized around the ISM functions and principles is included here as Attachment C.

V.   Conclusions

Conclusions drawn from this exercise follow.

- The importance of safety, good planning, and adherence to requirements is well established throughout the NSLS community. All those interviewed reflected this sentiment. Consideration for safety is well integrated to synchrotron, beam line, and experiment operations.

- ISM concepts are understood and accepted, but personnel are unfamiliar with ISM terms. Those interviewed knew about planning, authorization, and qualification requirements, but were not able to explain those requirements as meeting the five core functions or seven guiding principles. All had heard the terms and knew about ISM and when explained could see how the NSLS programs meet those concepts. Several people interviewed indicated their difficulty with use of too many confusing acronyms.

- Awareness of Enhanced Work Planning requirements is unbalanced. The technicians and supervisors interviewed appeared more engaged with that aspect of the ISM process than the scientific staff. Enhanced work planning has been most emphasized at the technical level within the department and the result is less awareness among the scientific community. The scientific staff knows that which directly affects them such as training and ESH experiment review requirements. That may be sufficient for visitors, but staff scientists are engaged in all levels of work at the facility, have an oversight responsibility for much of the work on the experiment floor, and should understand all of the programs in place to control risks.

- Awareness of the BNL Standard Based Management System (SBMS) and to the NSLS ESH Policies and Requirements Manual (PRM) is marginal. Few interviewed knew about these sources of information. When asked where to go for standards and requirements information, most indicated that they would ask someone from ESH or Operations.

VI. Recommendations

Recommendations for program improvement follow.

- Awareness of Enhanced Work Planning amongst the scientific staff must be improved. Staff scientists work with engineers, supervisors, and technicians. They are involved in project planning and have direct involvement with work throughout the facility. They must know the requirements for planning, for worker qualification, and project authorization.

- Any training or communications with staff about ISM must include definition of terms and acronyms that is intelligible to all personnel. Speaking and writing in common language is most effective.

   Note:
   Work on these first two recommendations has begun. All significant meetings at the NSLS include a, "safety moment" discussion. Those discussions are now being used to cover some aspect of ISM. The ISM concepts are well suited to this approach. Meeting organizers are able to choose just a portion of the program to discuss each time and so provide information in small packets that are easily remembered. Discussion among small groups of people provides an opportunity to introduce ISM terms and explain them with familiar language.

   Work on mapping the core functions and guiding principles to illustrate how the NSLS has implemented these concepts at both the facility and activity levels is also underway. When complete, that document will act as a useful reference and could provide the basis for any needed training.

- Personnel seeking definition of requirements should be made aware of and encouraged to use the Standards Based Management System (SBMS) and the NSLS ESH Policies and Requirements Manual (PRM). NSLS staff should continue to help with interpretation of those requirements, but should also show those in need where to find these references.

VII. Lessons Learned

This exercise provided an excellent opportunity for collection of feedback from facility personnel. Although time consuming, having small group or one on one discussions is an effective way to learn about these programs and to find strengths and weaknesses. Two notes on lessons learned follow.

- Using a discussion format as opposed to a more interrogative approach helped the interviewed personnel understand the questions more readily. Many personnel understand the NSLS work planning and other ISM program elements well, but often were thrown-off by ISM terminology that is not commonly used. NSLS success in the upcoming DOE audit may depend on an improved understanding and use of ISM jargon which the communication program in the year ahead will address. However, it is very desirable to arrange for ESH personnel who are more knowledgeable of ISM jargon to participate in audit interviews to facilitate the discussion.

- Interviews of this type with staff may result in more negative than positive feedback as they provide a forum for expression of concerns. These interviews therefore provided a valuable outlet for feedback from various working levels within the department to NSLS upper management. In addition to collecting information on ISM awareness, all interviewers agreed that the interviews were valuable as a feedback mechanism and as a training opportunity for NSLS staff members.

Note:

All comments, both positive and negative, were collected and presented to NSLS management for their awareness and action as appropriate. Only comments pertinent to ISM implementation are presented in attachment B of this report.

VII.   Acknowledgements

The following personnel contributed to this project. All are NSLS staff members except Mr. Ali who is assigned to the NSLS from the DOE Brookhaven Site Office. Personnel who were interviewed are not listed.

Andrew Ackerman
Mohammed Ali
John Aloi
Albert Boerner
Michael Buckley
Robert Casey
Robert Chmiel
Mary Anne Corwin
Nicholas Gmur

VIII.   Attachments

Attachment A; ISM interview questions

Attachment B; Interview data spreadsheet

Attachment C; ISM analysis

Attachment A

ISM Interview Questions

BHSO NSLS ISM Review
(ISM Pre-Audit) Questions

Date _____ Time (duration) _____

Position _____ Years at BNL _____ NSLS _____

Work description _____

_____

_____

_____

1. [CF 1-5] **How is your work planned/assigned?**

- NSLS management assigns priorities
- Larger projects go through project proposal
- Engineers manage projects
- Supervisors coordinate and assign tasks
- WCC's screen for risks
- Worker qualification process defines skills
- Enhanced work planning for > low, low, low.
- RWP, BURF, Energized Work Permits, SAF, Safety System Work Authorization
- Beam line review process

N/A   0   1   2   3   4   5

Comments _____

_____

_____

_____

_____

_____

2. [CF 1-5] **What fraction of your work is managed through 'enhanced work planning'?** _____
Explain enhanced work planning.

- All work screened for risk, complexity, and coordination requirements
- WCC's screen
- > Low, low, low = committee review
- Scope defined
- Hazards analyzed
- Controls defined
- Work authorized before start
- Feedback and improvement
- Formal documentation requirements (green sheet)
- Ever improving program

N/A   0   1   2   3   4   5

Comments _____

_____

_____

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_____

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3. [GP 3] **For work that does not go to 'Enhanced Work Planning' how are you qualified and expected to know control requirements?**

- Worker qualification matrices
- Job training assessments
- On the job training
- R2A2's
- JRA's
- Required reading SOP's
- CV

N/A   0   1   2   3   4   5

Comments _____

_____

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4. [GP 6] **Have you been involved in determining work control requirements or hazard analysis for the NSLS?   Yes/ No**

   o   Work planning meetings
   o   Discussion with:
      ▪   NSLS ESH staff
      ▪   Supervisor
   o   SBMS
   o   Experience
   o   Training
   o   JRA's
   o   SOP development

   If yes, please explain:

   _____

   _____

   _____

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   _____

   N/A   0   1   2   3   4   5

   Comments   _____

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5. [GP 5] **What are some of the controls that have been implemented for your work?**

- LOTO
- PPE
- HEPA vacuuming lead
- Fall harness
- IH sampling

- HP survey
- Eye protection
- Work in hood
- No unattended operation
- Gas line leak checking

N/A   0   1   2   3   4   5

Comments

6. [GP 5 & 6] **How are control requirements determined?**

- RWP
- BURF
- Energized Work Permits
- SAF
- Safety System Work Authorization
- Enhanced Work Permit

- SOPs
- SBMS
- PRMs
- ESH Staff Review
- SME review
- JRAs

Are controls tailored to your work?   Yes/No
Do they seem appropriate?   Yes/No

Example:

N/A   0   1   2   3   4   5

Comments

7. [GP 7 & CF 4] **How do you know when you are authorized to proceed with a project or task?**

   - Supervisor acknowledges
   - Green sheet signed and posted
   - SAF posted
   - Skill of the worker
   - Worker Qualification Matrix
   - R2A2's
   - RWP, BURF, Energized Work Permits, SAF, Safety System Work Authorization, Enhanced Work Permit, SOP's

   N/A   0   1   2   3   4   5

   Comments _____

   _____

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8. [GP 2] **What actions are you expected to take if something unexpected arises that is outside the scope of the original plan?**

   - Stop and analyze
   - Consult supervisor
   - Review with WCC
   - Review with ESH staff
   - Reconvene Enhanced Work Planning committee

   N/A   0   1   2   3   4   5

   Comments _____

   _____

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9. [CF 5] **How do you provide feedback during the work or at the end of a project?**

   - Complete section of 'Green Form'
   - Discuss with supervisor
   - Discuss with ESH staff
   - Suggestion box
   - Discuss at group meetings
   - ESHI Committee
   - End of run forms

   Are you asked for comments?   **Yes/No**

   N/A   **0**   **1**   **2**   **3**   **4**   **5**

   Comments _____

   _____

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10. [GP 4] **How is worker feedback used by the department? Do circumstances improve when you speak up?**

    - Supervisor or ESH staff effect change
    - Referral to Associate chair for ESH&Q for evaluation and assignment
    - Lessons learned document
    - ESH Highlight

    Example: _____

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    _____

    _____

    N/A   **0**   **1**   **2**   **3**   **4**   **5**

    Comments _____

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11. [GP 2 & 4] **Does NSLS management demonstrate a commitment to safety?**

- Work place walk through
- Meeting discussions
- Performance appraisals
- R2A2's
- Email notices
- Sensible assignment schedules

- OHSAS
- Personnel resources
    - Op Co's
    - Beam line staffing
    - ESH staff

If yes, how?

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N/A   0   1   2   3   4   5

Comments   _____

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12. [GP 1 & 2] **What is your role in the safe conduct of work?**

- Everyone responsible:
    - for own safety
    - to look out for others
    - to follow requirements
- Stop if scope changes or something unexpected arises

- Stop work (imminent danger)
- Participate in work planning (enhanced or not)
- Provide constructive feedback
- No shortcuts

N/A   0   1   2   3   4   5

Comments   _____

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13. [GP 2] **How is your role and responsibility defined?**
    - R2A2's
    - Green sheet
    - JRA's clarify requirements
    - RWP, BURF, Energized Work Permits, SAF, Safety System Work Authorization, Enhanced Work Permit, SOP's
    - Misunderstandings resolved with supervisor

    How are misunderstandings resolved?

    N/A   0   1   2   3   4   5

    Comments

14. [GP 4] **Does NSLS management adequately balance priorities (safety and operations)?Yes/No**

    - Schedule well planned and sensible
    - Project proposal process sets priorities
    - Safety planning well integrated
    - Review requirements well defined and articulated
    - Demonstrate commitment
    - Adequate staffing

    N/A   0   1   2   3   4   5

    Comments

15. Suggestions for improvement?

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Core Functions

1) Define the scope of work
2) Analyze the hazards
3) Develop and implement hazard controls
4) Perform work within controls
5) Provide feedback and continuous improvement

Guiding Principles

1) Line management responsibility for safety
2) Clear roles and responsibilities
3) Competence commensurate with responsibilities
4) Balanced priorities
5) Identification of safety standards and requirements
6) Hazard controls tailored to work performed
7) Operations authorization

Scale

N/A   principle or function is not required for this position
0   principle or function is required but non-existent
1   principle or function is required but severely deficient
2   principle or function is required but marginal or needs improvement
3   principle or function is required and is appropriate, satisfactory or expected
4   principle or function is required and is more than adequate; commendable
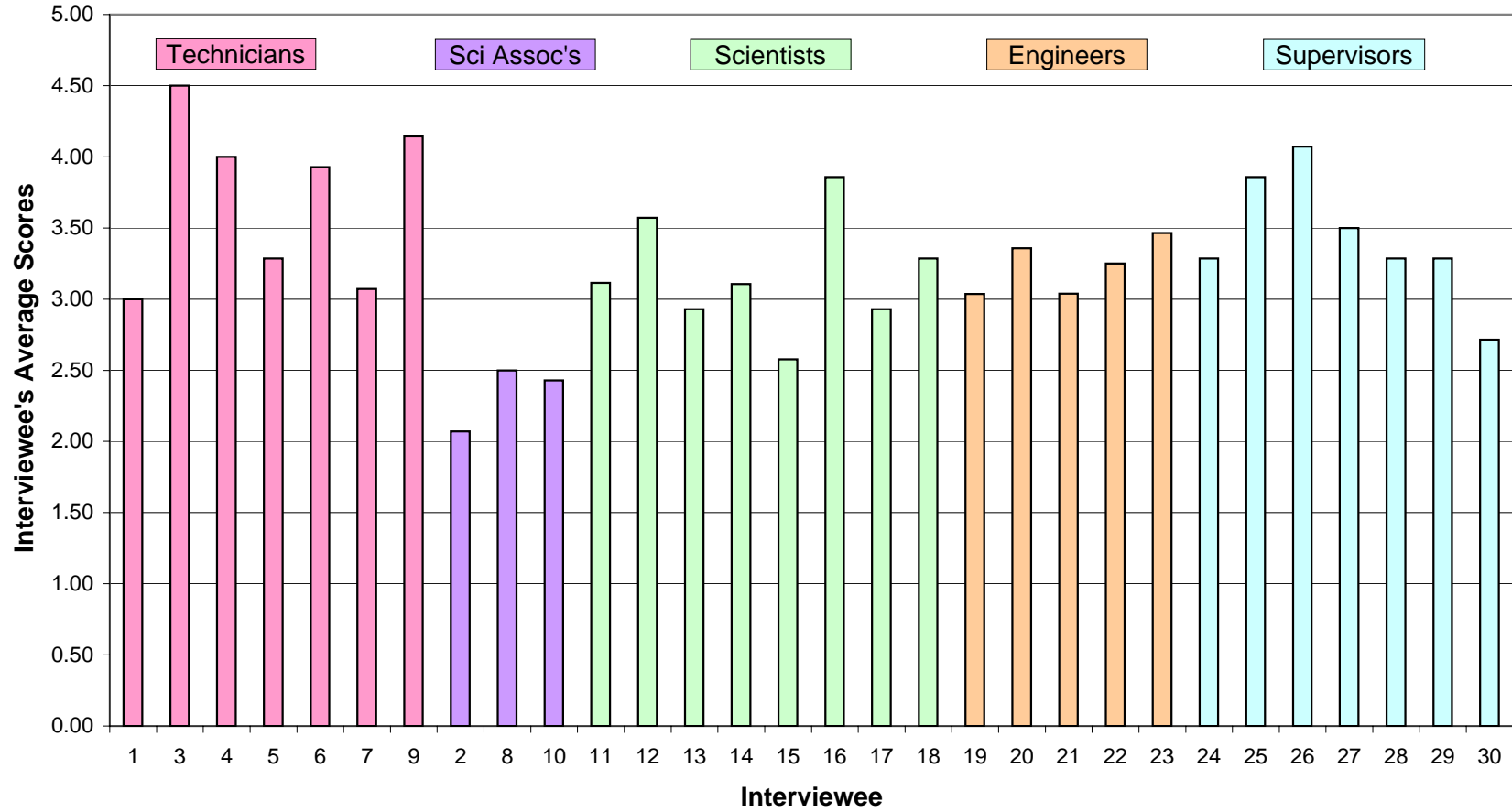5   principle or function is required and considerably exceeds expectations
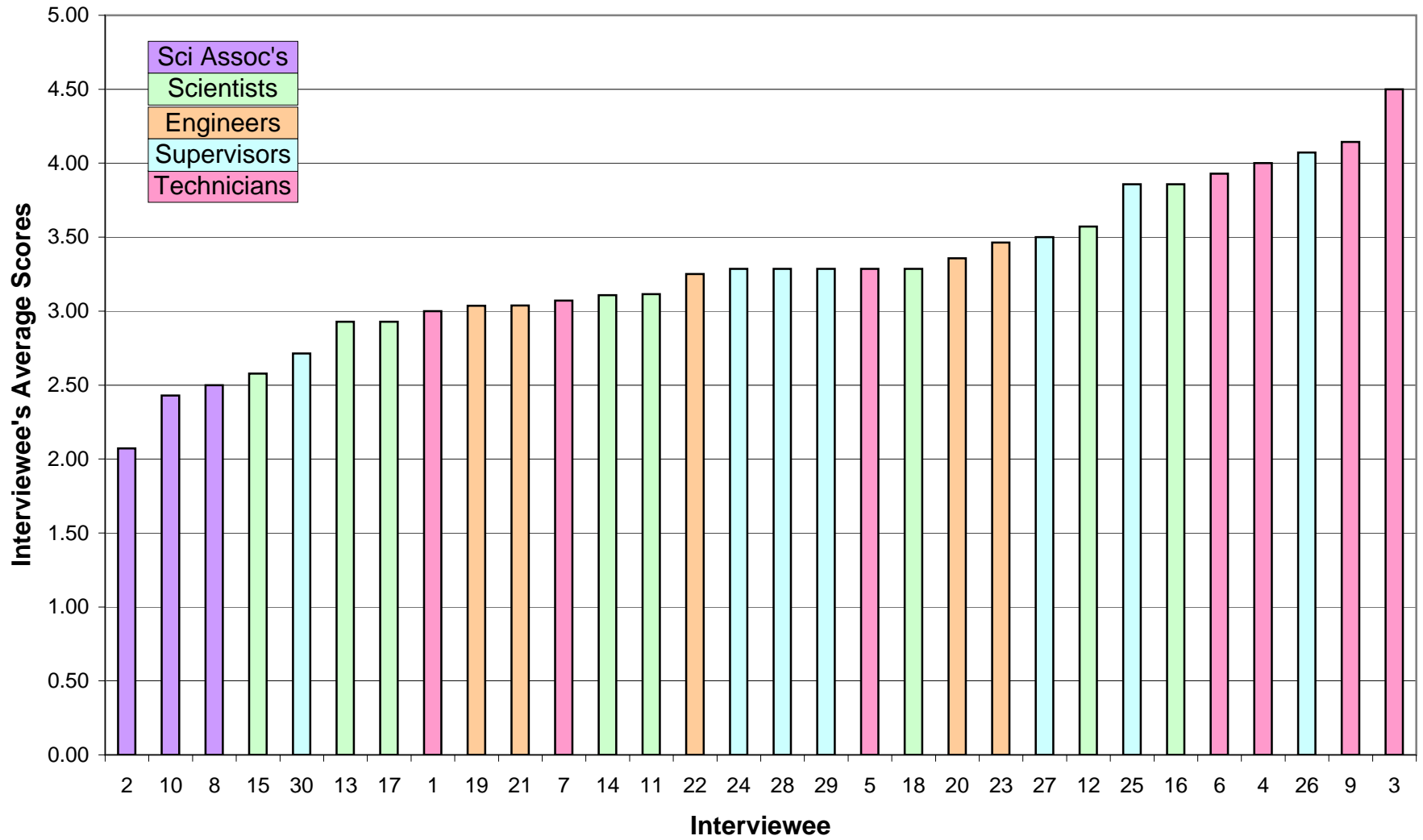
Attachment B

ISM Interview Data Spreadsheet

Scored Answers

ID No.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Sum	Answr Count	Individ Avg
1	3	2	3	3	4	3	N/A	3	3	3	3	3	3	3	39	13	**3.00**
3	5	4	5	4	5	5	4	4	5	5	5	4	4	4	63	14	**4.50**
4	4	3	4	4	4	2	4	5	4	4	4	4	5	5	56	14	**4.00**
5	3	3	3	3	4	4	3	4	3	3	4	3	3	3	46	14	**3.29**
6	4	4	4	4	5	4	3	4	4	4	4	4	3	4	55	14	**3.93**
7	3	3	3	3	3	2	3	3	4	4	3	3	3	3	43	14	**3.07**
9	5	4	5	4	4	4	4	4	4	4	4	4	4	4	58	14	**4.14**
2	2	1	2	1	3	1	1	3	3	3	3	1	2	3	29	14	**2.07**
8	2	2	3	3	3	2	2	3	3	2	3	3	2	2	35	14	**2.50**
10	2	2	3	2	2	2	3	3	3	3	2	2	2	3	34	14	**2.43**
11	4	4	3	2.5	N/A	3	4	3.5	2	3	2.5	4	2	3	40.5	13	**3.12**
12	2.5	4	4	3.5	3	3	4	3.5	4	4	3	5	3.5	3	50	14	**3.57**
13	3	3	3	3	3	3	2	4	3.5	2	2	4	2.5	3	41	14	**2.93**
14	5	4	3	4.5	3.5	3	3	2	3	3	2.5	2.5	2	2.5	43.5	14	**3.11**
15	3.5	3	2	2.5	UNK	1.5	1.5	2	3	2	2.5	4	4	2	33.5	13	**2.58**
16	4	5	3	5	3.5	4	4	3	4	4	4	4	3	3.5	54	14	**3.86**
17	3	4	4	3.5	4	3.5	2	3.5	3	2	3	2.5	2	1	41	14	**2.93**
18	3.5	3	4	3	3.5	4	3.5	3	4	2.5	3	4.5	2.5	2	46	14	**3.29**
19	4	3	3	3.5	3	3	3	3	3	2	3	3	3	3	42.5	14	**3.04**
20	3	4	3	4	3	3	4	5	3	3	3	3	3	3	47	14	**3.36**
21	4	4	3	N/A	3	3	3	4	2	2	3	3	3	2.5	39.5	13	**3.04**
22	4.5	4	3	3	3	3	3	4	3	3	3	3	3	3	45.5	14	**3.25**
23	5	4	4	4	3	4	4	3	3	3	3	3	3	2.5	48.5	14	**3.46**
24	4	3	3	3	4	3	3	4	3	3	3	3	2	5	46	14	**3.29**
25	4	4	4	4	5	4	4	5	3	3	4	4	3	3	54	14	**3.86**
26	5	5	4	4	4	4	4	5	3	4	4	4	3	4	57	14	**4.07**
27	4	4	4	3	4	3	4	4	3	3	4	3	3	3	49	14	**3.50**
28	4	4	3	3	4	3	3	4	3	3	3	4	2	3	46	14	**3.29**
29	3	4	3	3	4	3	3	4	2	3	4	4	3	3	46	14	**3.29**
30	4	3	3	2	3	2	2	3	3	2	2	3	2	4	38	14	**2.71**

Group Comparisons

Y-axis: **Interviewee's Average Scores** (0.00 to 5.00)

X-axis: **Interviewee** (1, 3, 4, 5, 6, 7, 9, 2, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30)

Legend: Technicians, Sci Assoc's, Scientists, Engineers, Supervisors

Individual Averages Lo to Hi

Legend:
- Sci Assoc's
- Scientists
- Engineers
- Supervisors
- Technicians

Y-axis: Interviewee's Average Scores (0.00 to 5.00)

X-axis: Interviewee — 2, 10, 8, 15, 30, 13, 17, 1, 19, 21, 7, 14, 11, 22, 24, 28, 29, 5, 18, 20, 23, 27, 12, 25, 16, 6, 4, 26, 9, 3

Group Averages Per Question

Groups' Averages

Score

Question Numbers 1-14 for each Group

Technicians   Sci Assoc's   Scientists   Engineers   Supervisors
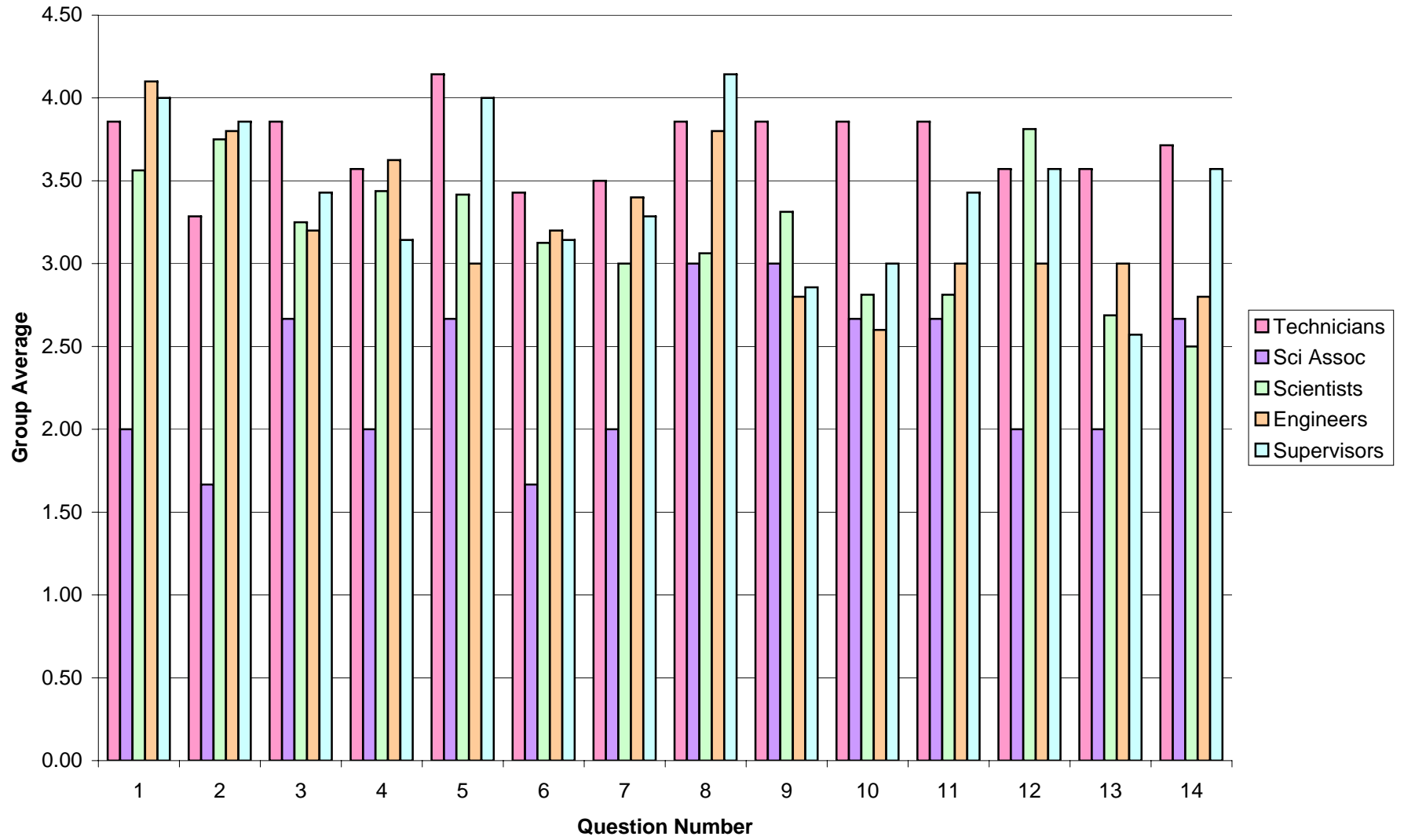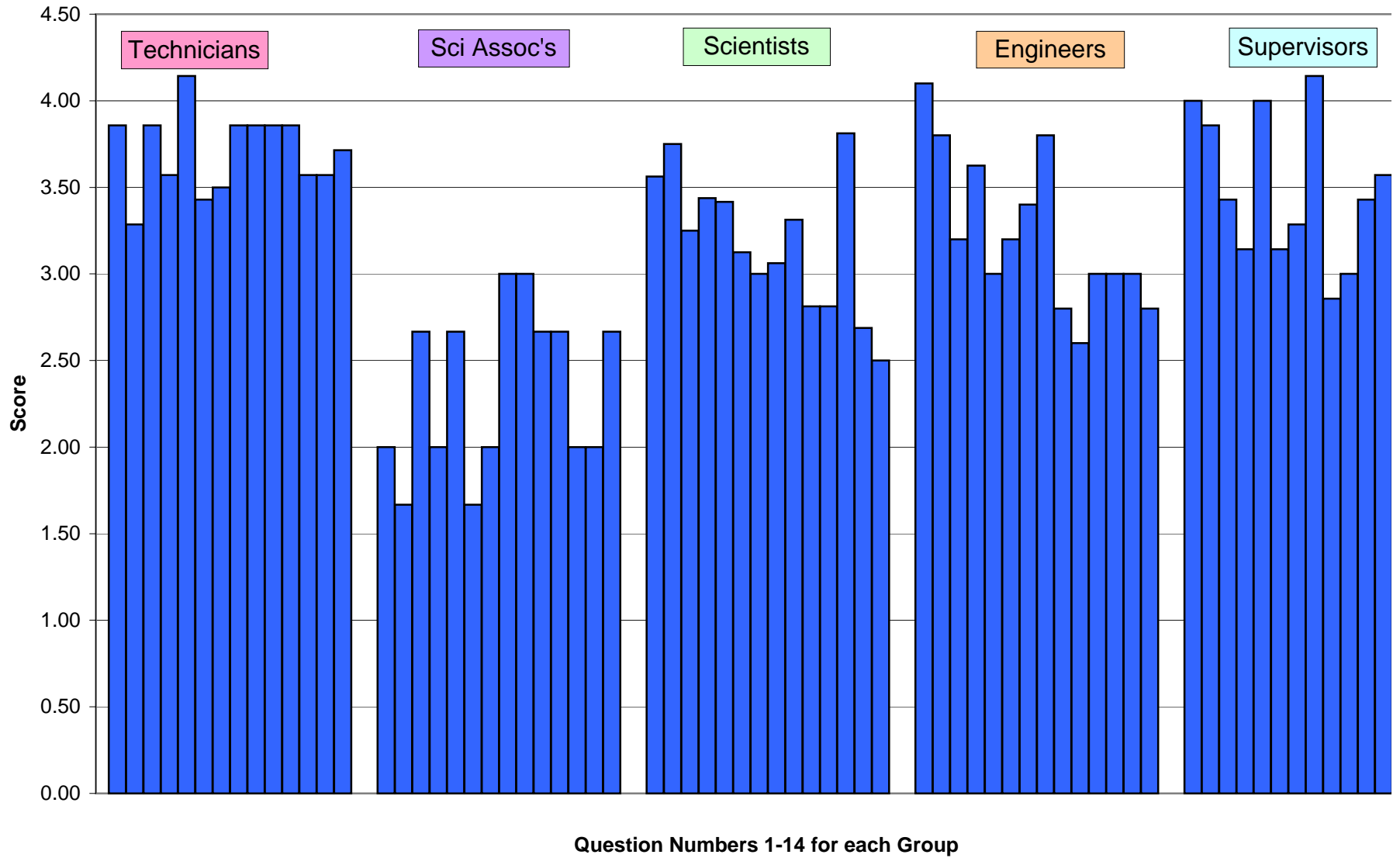
Interviewees' Comments
Weekly video conferences w/spokesperson.
Under a lot of pressure to make beamline improvements during maintenance.
Not aware of WCC.
Not aware of WCC.
Strong answer on management of projects/priorities. Less knowledgeable of routine work processes.
Sniffer (air sampler) for lead handling gets in way, is uncomforable and humiliating.
"Work screening process is too confusing."
Does not know about enhanced work planning.
Not aware of work planning.
Not knowledgeable of enhanced work planning.
Stated there is no formal qualification process.
Huge amount of safety documentation to have to read through.
Does not know what a JRA is.
Has not seen R2A2 in a long time. Recommends R2A2 as "read & sign" under JTA for beam staff.
Put link from training page to R2A2 for beamline staff.
Weekends are a problem; may do things to help users not necessarily done during the week.
Doesn't know what her rights are.
Machine shop trainings well done.
Serves as the "eyes and ears" for ESH staff.
Doesn't know what hazard analysis is.
Can't remember what JRAs are.
Not aware of SBMS.
Not really aware of SBMS.
Not aware of SBMS.
Problems logging into SBMS (PC not on BNL domain).
Confused by meaning of controls.
Moving in direction of having user just sit at PC without touching anything.
Limit different authorizations for any individual -- too much to do and know -- otherwise mistakes occur.
The moment you make a scientist responsible for equipment, they make sure its properly handled.
Appreciates safety checklist at beamlines when first started working here.
Did not mention energized work permits.
Stated controls are excessive.
After SLAC, no one wants to touch anything; work takes longer.
Feels wearing hard hats, heavy shoes, gloves for manual chain hoisting is a hazard.
Not aware of PRMs.
Had not heard about PRMs.
Does not know about PRMs.
Sometimes SAF doesn't present all hazards and not well explained; not enough info.
Users don't always know what to write on SAF.
Users aren't reading SAFs.
Not aware of SBMS.
SBMS too high level and comprehensive; gets direct answers from supervisor or ESH staff.
Default answer is "not authorized"; will always ask supervisor first if authorized.
In past, would perform some work himself but now thinks twice and asks if unsure.
Not aware of worker qualification matrix.
End of run form too long; people pressed to leave at end of experiment.
Not all users fill out end of run forms.
Feels end of run form provides good information.
End of run form too long.
End of run needs to be shorter; doesn't want to ask users to submit; too many questions.
No time to do end of run at end of experiment. Questions are slanted for negativity.
Aware of suggestion box.
If people don't attend weekly user meetings, they use it as excuse for not complying (e.g., green boards)

Interviewees' Comments
Too many posters on walls; procedures posted are not noticed any longer.
Emails w/ESH highlight & lessons learned should have one-liner info with link. Otherwise won't read for a while. If one-liner and pertains to him, will go to link and read immediately.
Could not provide examples of worker feedback.
Feels there is a lot of feedback from safety perspective.
Feedback regarding operations is less used.
Doesn't know how feedback is used.
Sees improvement in feedback process; there's a higher level of awareness.
Some complaints are unheeded.
No follow up meetings are feedback.
Concerned about visa date being supplied on SAF.
Feels some requirements dumped on staff (e.g., FVA) but understands requirements to protect staff.
Feels safety is just a key word to make things happen. Safety is always increasing.
"Overkill is good."
BNL should have closed on the last snow day.
Major effort in the direction of safety.
Safety sometimes overboard.
Management directs new safety initiatives as needed.
Need to have procedure in place to check for specific training specified in SAF by safety officer.
Makes workers do the extra work.
Staff issues; not able to do everything.
There is a lack of manpower; more work required; they are mutually exclusive.
"Safety begins with the workers."
"Responsible for your own and others' safety."
"Look out for yourself and everyone else around you."
Beamline is kept safe for self, others and safety of people at other beamlines.
Will complain about other people's safety behavior.
Role includes setting a good example.
Thinks about poster with pictures of family members; safer at home as a result.
Better prepared mind-set in the last 3 years related to safety.
Felt oil refinery speaker was very good.
Makes sure staff are trained and ensures training is in budget.
Not aware of R2A2s for beamline staff.
R2A2 is too generic; needs specificity for local contacts.
May be performing work outside of scope.
"Can't sacrifice safety for science."
"Safety planning well integrated."
Management exercises prudent caution rather than being cavalier.
Mode is safety first, then timely. Used to be opposite.
Emphasized safety as highest priority.
There is a hostile environment.
A lot of paperwork; slows down work; doesn't allow time to prepare in advance.
Too much time spent on inspections.
"Schedule has gotten better."
"Schedule well planned and sensible."
"Schedule well planned and sensible."
Monthly Activity Plan doesn't help to expedite the work.
Feels there is politics involved in balancing priorities (safety/operations).
Feels management at higher levels balance priorities, but not his/her level. But was not balanced during recent shutdown.
"Priority is balanced but feels a little rushed; safety is too crazy."
Have to squeeze priorities at the end of winter maintenance.
Staffing is not adequate.

Interviewees' Comments
"Safety side not recognizing schedule."
Management does its best within budget constraints.
Not sure if there's a move of staff from ops to safety but felt we were well equipped before.
Jobs are extended due to safety requirements; not sure if always worth it.
Concerned operations is maintained with insufficient funding.
Safety is well staffed.
Beam operations: NSLS wants 100% perfection; x-ray ring has degraded; not enough experienced staff. Beam noise complaints not satisfied. Thinks operations does have strict enough parameters limits to control machine and effect repairs/improvements. Loss of Ring Manager had a serious impact on operations.
Workers feel pressured with alloted time. Job may require 2-1/2 days to complete and only 1-1/2 days are assigned and scheduled.
SLAC training misdirected; should be for contractors not general staff.
Training is out of balance (believes management feels there is a balance). Safety is a state of mind.
Training is seen as removing the responsibility from management and putting it on staff through training.
Work permit system help is always there.
Clear statement that work must be done safely.
Too many acronyms are used.
Annual refresher training (jargon) should be provided for the acronyms and ISM jargon.
No organizational chart available; no clear lines of supervision.
Complained about safety recalls for baby carriages, etc.; is this a real concern at BNL?
Use less acronyms (PRM, SBMS, etc.) during meetings and presentations; they are presented without adequate definition.
Acronyms are used too much when undefined.
Communication needs to be improved within section.
Safety always increasing; never backing off; piling up on us.
No adequate actions taken for comments made in past. Feels not all issues are addressed.
SBMS too voluminous; prefers NSLS website; more often will ask ESH staff.
Not enough time to think due to lack of staff and time.
Unable to get work permits issued on weekends; beam time forefeited; vacuum venting occurs w/o warning.
Need to adequately staff NSLS.
More time and staff for supervisors to tend to safety documentation is needed (e.g., Q-matrices, developing SOPs).
Biggest liabilities: intermittent/general users.
Do contractors have our "safety culture"? How do we give this to them?
Why spend so much time reviewing "xerox" repair people.
Not fully implementing work planning at engineering level.

Interviewers' Comments
There is a vast discrepancy between the Science Associates and Techs with regards to understanding and knowledge about NSLS Work Planning Systems. The Science Associates act as "supervisors" or beamline contacts yet their understanding of Work Planning and ISM was poor. The ES&H expectations from Science Associates should be higher.
Most of the Science Associates and Techs were not able to identify the SBMS and/or NSLS PRMs as a reference or source of ES&H references/requirements. This lack of knowledge on the SBMS and PRMs makes one believe that MAYBE actual requirements are not being followed when actual work is being conducted. I maybe drawing a very broad conclusion but I do feel troubled that NSLS staff cannot identify at least the SBMS as a source of ES&H references/requirements.
Most Techs were successful in identifying the NSLS Work Planning system that they most often used. However, most did not have a comprehensive knowledge of Work Planning Systems. Our method of interviewing and "extracting" answers may not the same followed by OA during their ISM Assessment next year. Therefore, additional training maybe necessary for Techs (and definitely for the Science Associates) to make them better versed with all the possible Work Planning tools available at the NSLS.
Most of the engineers were aware of the ISM system and were able to articulate the general concepts of it well.
Many of the interviewees made the same comment about there being too many acronyms in the ES&H arena. Our group would like to offer the suggestion that a acronym definition web page be posted somewhere in the safety web page. We would also like to volunteer to develop this page.
There were several complaints about the top-secret organizational chart; they feel that there needs to be an organizational chart posted on the web for all to see, which contains clear lines of responsibility.
Some were frustrated with the overwhelming amount of lessons learned and recalls that are emailed to them. They feel that selecting out the important ones would help with this issue.
Several people expressed the need for annual refresher training that contained an over view of the key points of ISM, and how the points relate to the workers in the real world.
One of the weaker points was in the area of worker feedback. People knew that feedback was expected; yet most were not able to discuss the pathways for supplying this information with any specifics.
Overall, the engineers knew the ISM system and expressed it well with minimal prodding.
Knowledge of how work is planned and how they as supervisors and WCC's plan work was good.
Seems that the communication from the supervisors upper management was somewhat lacking when it came to work and priorities
Overall good sense of safety when it came to managing there people and controlling the hazards through the work planning process.
Feedback was there for the enhanced work planning and day to day work.
Most interviewees did not know the exact terminology of the processes/requirements but expressed them in their own words.
All interviewees understood that if work did not go as planned that they should stop what they are doing and revisit work planning as well as contact other relevant individuals.
Interviewees were not familiar with some of the terms or concepts as presented in the questionnaire. Interviewers needed to rephrase and coax knowledge and answers out. Once this hurdle was overcome, answers were at least at the 3 level.
One beamline Local Contact/Chief Engineer was the best of the group (3.86) because of many major jobs done on the floor that required familiarity with Work Permits and Beamline Reviews.
Many interviewees were not sure what was meant by "feedback" and confused this with general knowledge issued by staff members.
End-of-run forms were loved/not loved 50:50. Users thought they were too long, difficult to fill out and took too much time at the end of experiments when everyone just wanted leave. Staff found them useful due to the information provided.
There was a lack of knowledge of what was meant by "work controls" and "enhanced work planning."
Many interviewees commented that the emphasis on safety (for better or for worse) has greatly increased in the last five years. "Work as usual" no longer exists in the old sense of the phrase – a new standard has been set.
Related to the above, the individual technician or scientist who used to do everything probably does not exist any longer. There is more of a tendency to contact "experts" regarding how to do a job or to give the job to someone else who knows all the steps that must be taken.

Interviewers' Comments
It must be remembered that the answers and scores to questions 10, 11 and 14 are directed to the NSLS department and not to the interviewee.

Attachment C

ISM Analysis

General Weakness

Core Function 5;   Feedback and improvement

- o Communications incomplete
  - Confusing acronyms and terms

Guiding Principle 5; ID safety standards and requirements

- o Low awareness to PRM's and SBMS

Specific Weakness

Scientific staff has inadequate awareness of Enhanced Work Planning

Strengths

Core Function 1-4;   Defined scope, Hazard analysis, Develop and implement controls, Work within controls

- o Safety importance understood
- o ISM principles understood