

WOG TWG K/A Catalog Update Survey

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Participating Sites

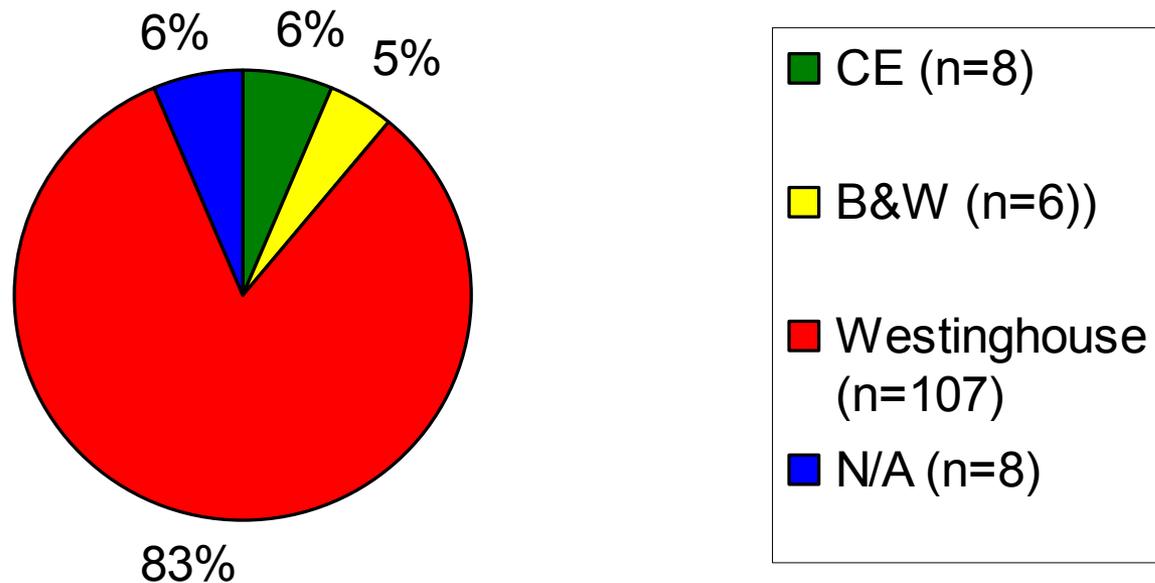
Beaver Valley (FENOC)	14	McGuire (Duke)	10
Braidwood (Exelon)	4	Oconee (Duke)	6
Callaway (Ameren)	1	Palisades (NMC)	3
Catawba (Duke)	4	Palo Verde (Pinnacle)	4
Comanche Peak (TXU)	2	Prairie Island (NMC)	2
Cook (American Electric)	1	Robinson (Progress)	1
Diablo Canyon (PG&E)	8	Salem (PSEG/Exelon)	3
Farley (Southern Nuclear)	1	South Texas (STP)	17
Ginna (Constellation)	8	VC Summer (SCANA)	4
Harris (Progress Energy)	4	Vogtle (Southern Nuclear)	3
Kewaunee (NMC)	3	Wolf Creek (Wolf Creek)	14

NRC 11

Total N = 118-129

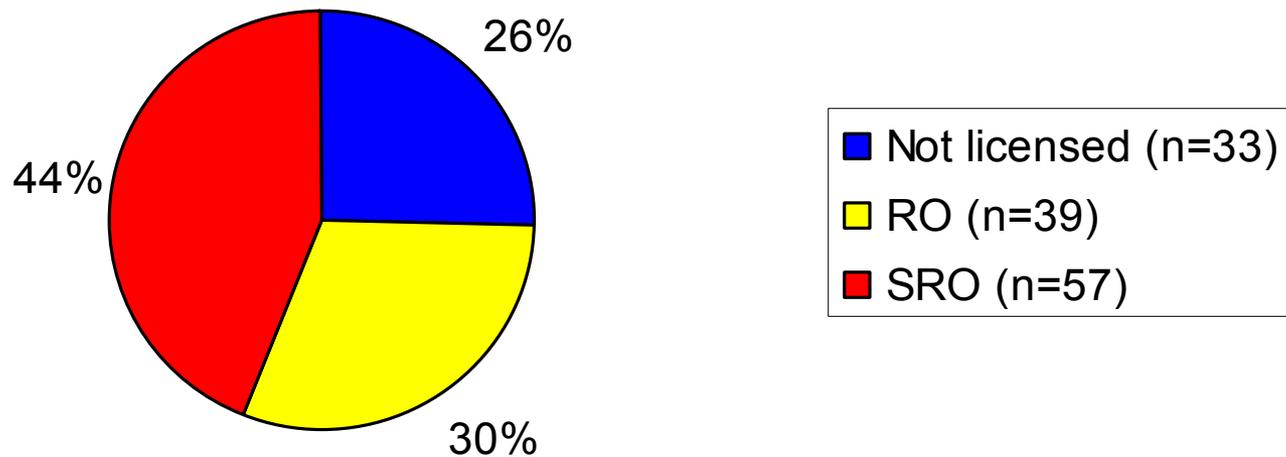
NSSS Vendor Types

Percentage of Participants from each NSSS Vendor Type (N=129)

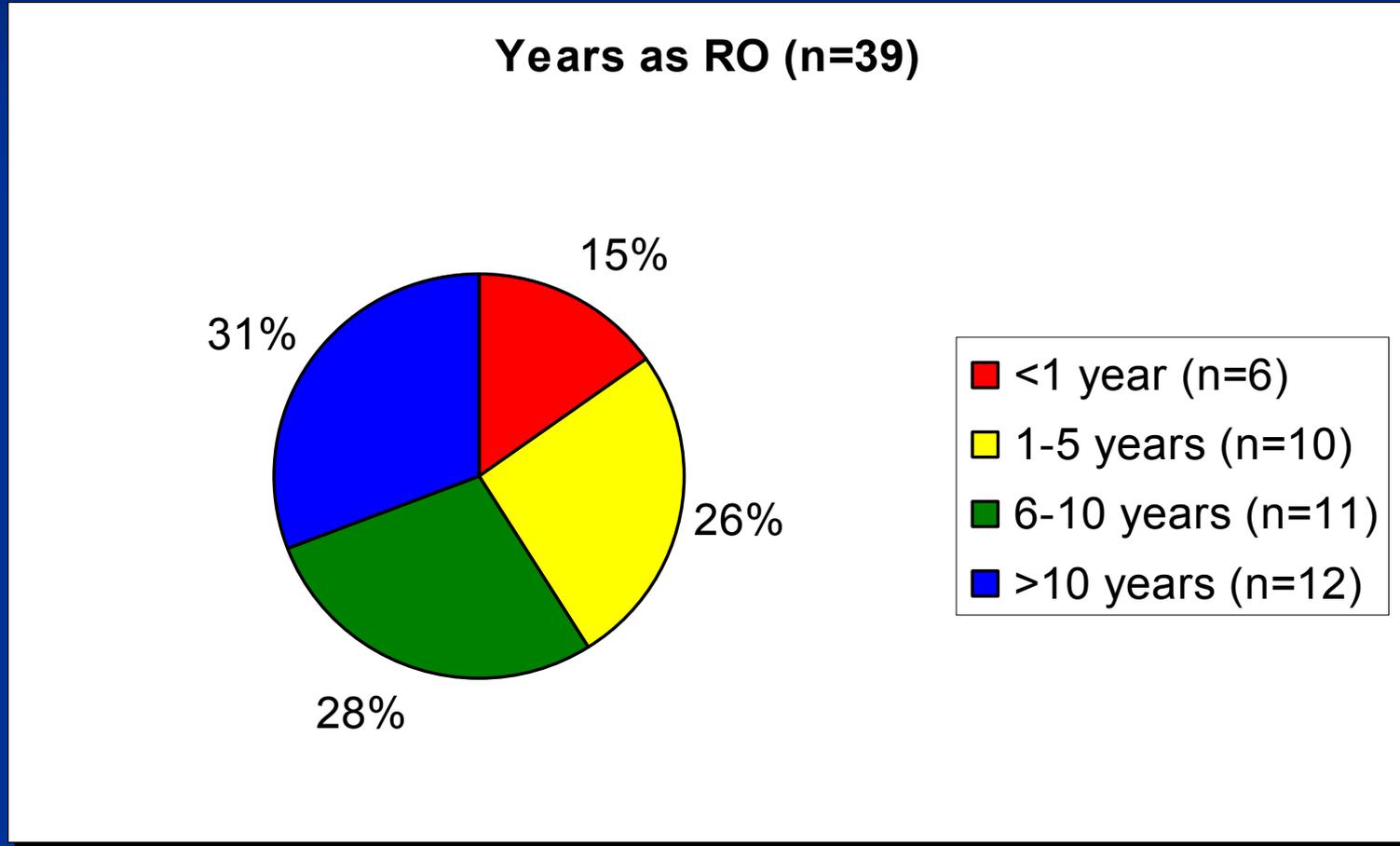


Participants' Current License Status

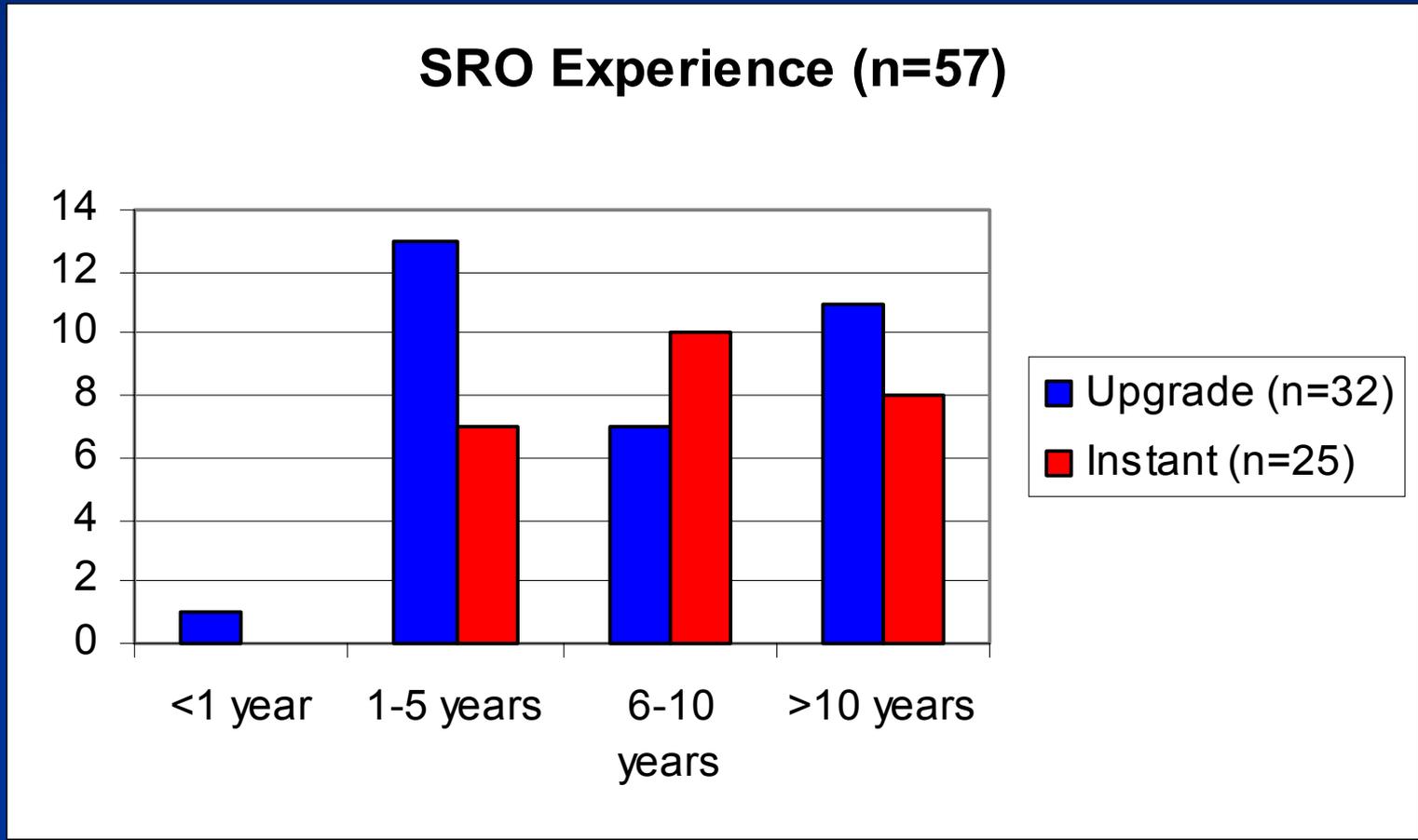
Current License Status (N=129)



Current ROs' Years of Experience

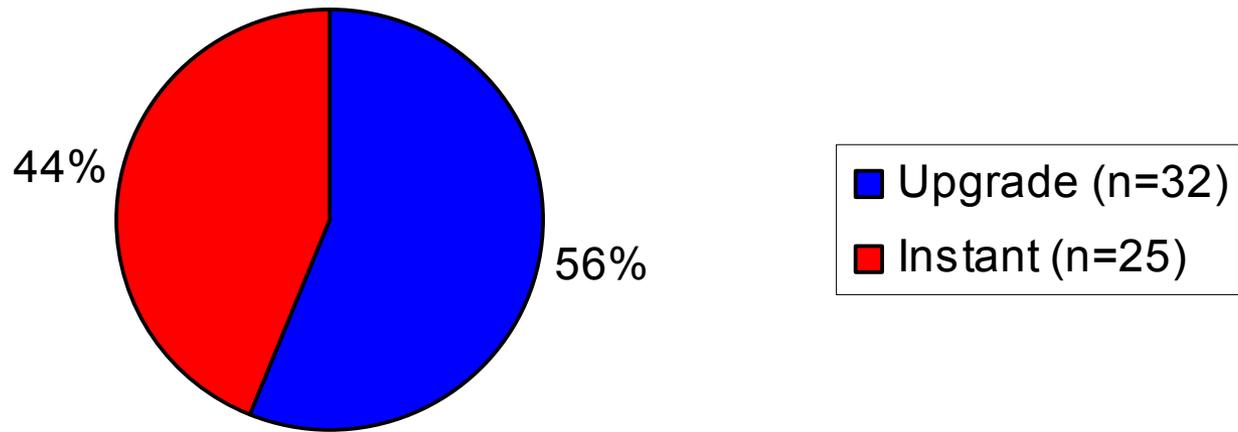


Current SROs' Years of Experience by Type of SRO License Held



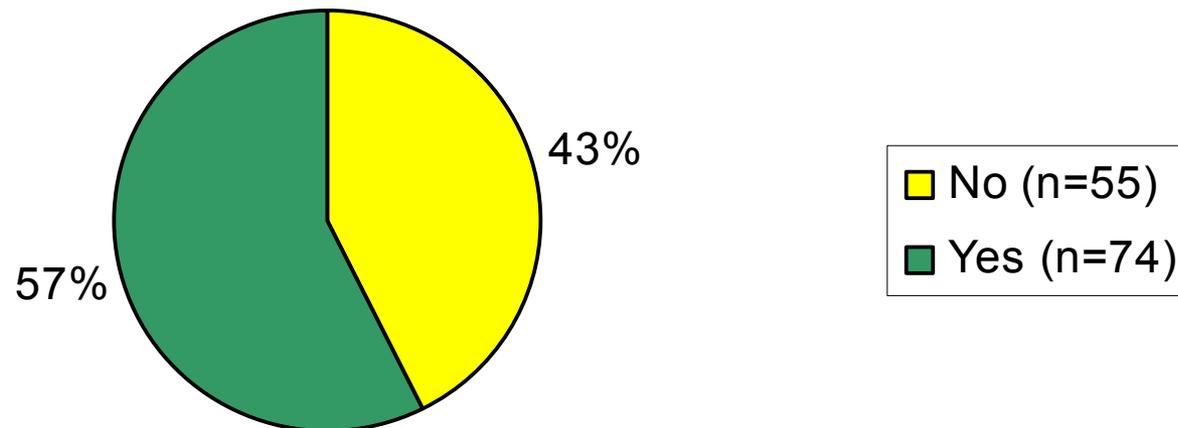
Type of SRO Licenses (Currently licensed only)

SRO Type (n=57)

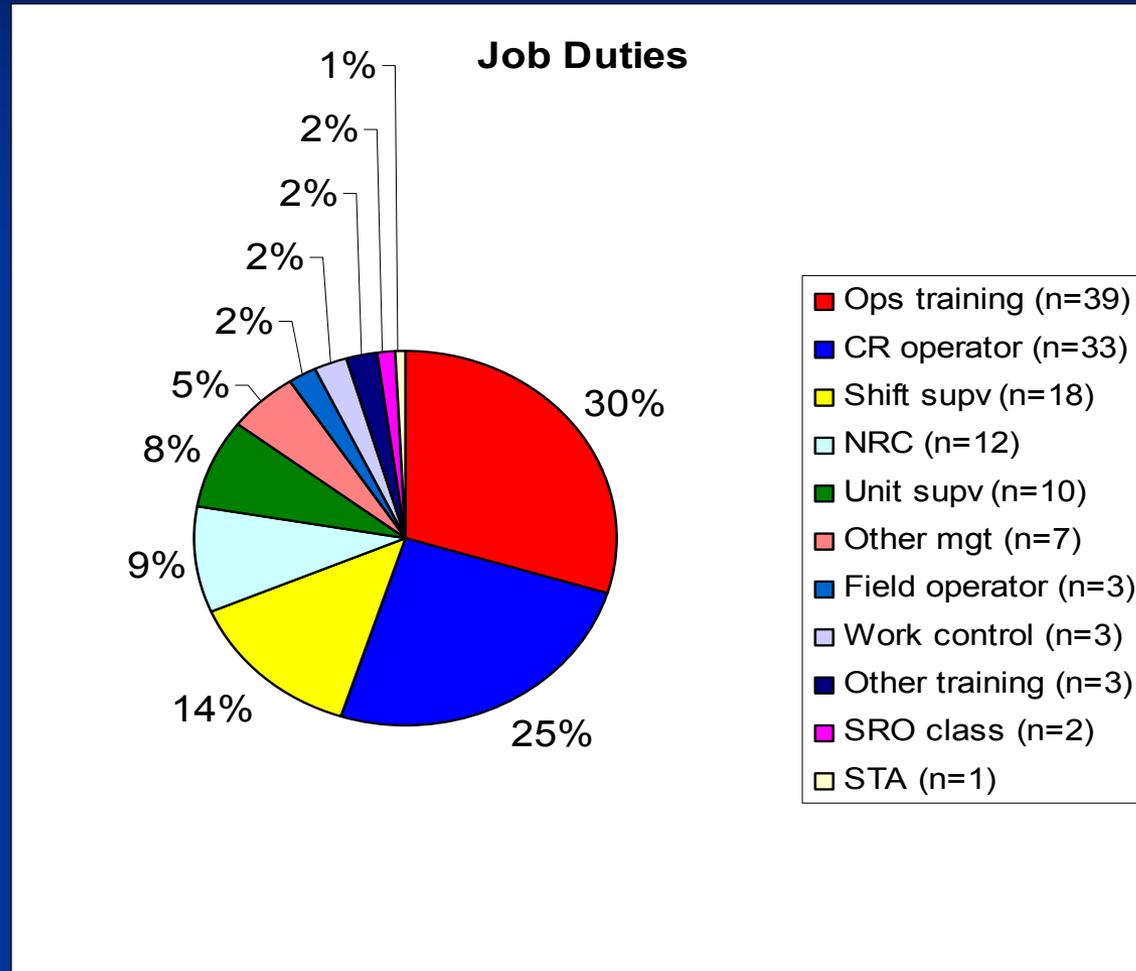


Experience with the Exam Process

Developed or Reviewed an Exam (N=129)

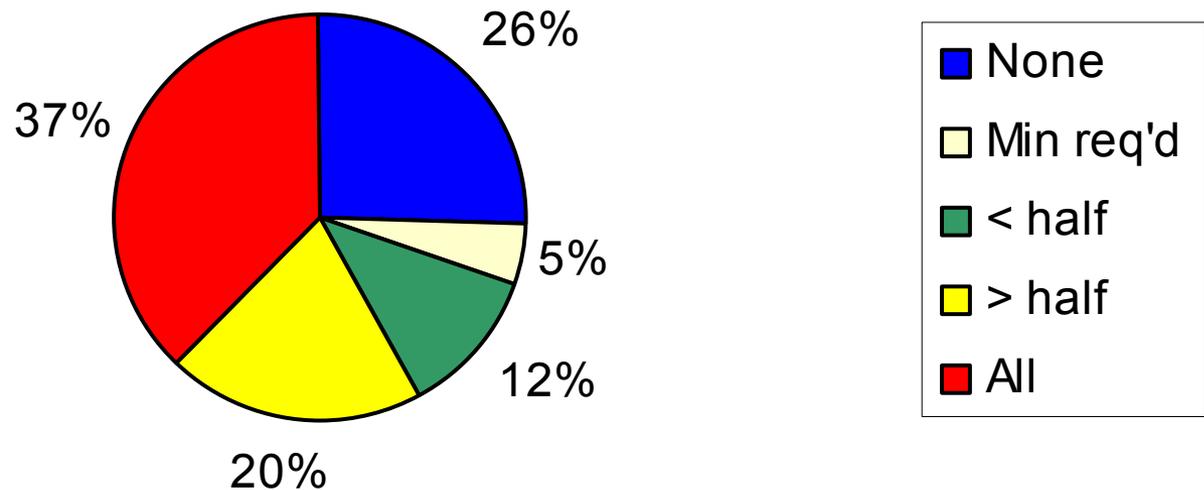


Participants' Current Job Duties



Amount of Time Spent “Standing Watch” in the Past 5 Years

Time on Shift (N=129)



K/A Importance to Safety Rating Scale

- Same scale used for 2 previous surveys (Rev. 0 and Rev. 2 of the K/A Catalog)
- 5-point scale:
 1. Insignificant importance
 2. Of limited importance
 3. Fairly important
 4. Very important
 5. Essential

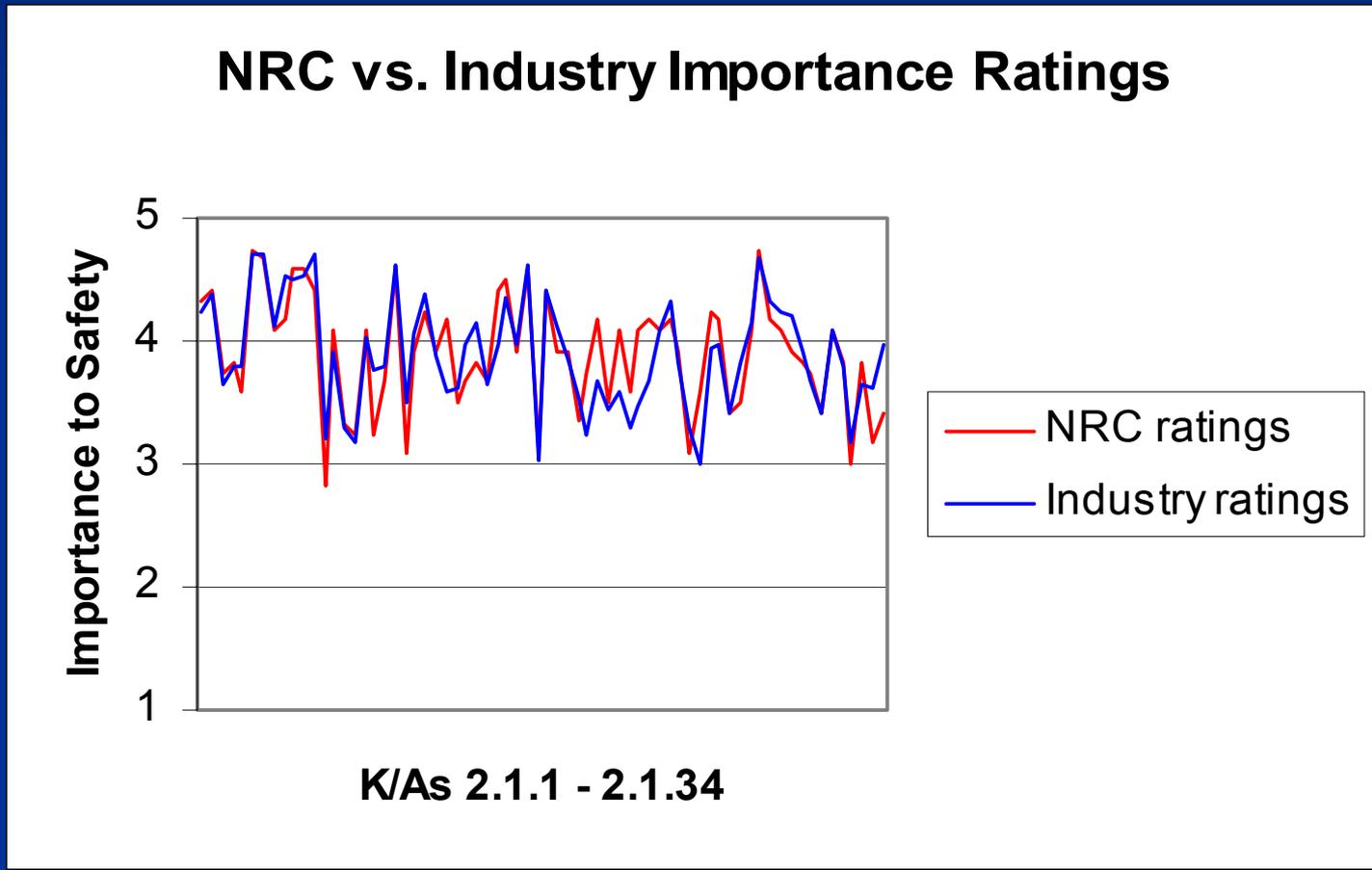
Data Analyses of “Importance to Safety” Ratings

- Compared the importance ratings from different groups of participants
- Calculated average RO and SRO importance ratings for each K/A
- Calculated the standard deviation of the ratings for each K/A (a measure of disagreement among raters)

Overall Results for Importance Ratings

- Different groups of raters gave similar ratings
 - Type of license held (none, RO, SRO) made no difference
 - Familiarity with the exam process made no difference
 - Type of job duties made no difference (trainer vs. NRC examiner vs. operator vs. manager)

NRC Examiners vs. Industry Ratings on the Conduct of Ops K/As



$r = .93$ over all ratings

Overall Results for Importance Ratings

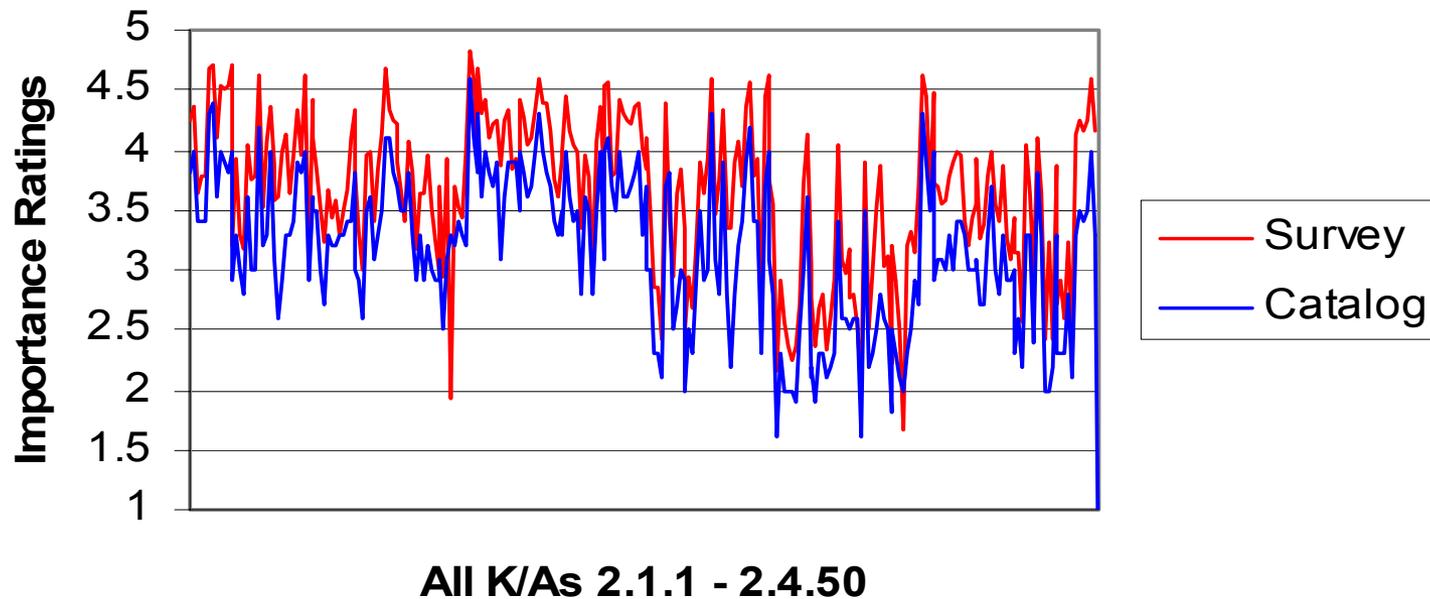
- Only the amount of time the rater had “spent standing watch in the past 5 years” was related to the importance ratings
 - Overall relationship weak ($r=.21$) but statistically significant
 - In general, the more time a rater had spent on-shift in the past 5 years, the higher his/her importance ratings

Overall Results for Importance Ratings

- Different groups of raters gave similar ratings
- Pattern of survey “importance to safety” ratings very similar to ratings in the current K/A Catalog ($r = .91$)

Correlation of Importance Ratings: Survey vs. Catalog ($r = .91$)

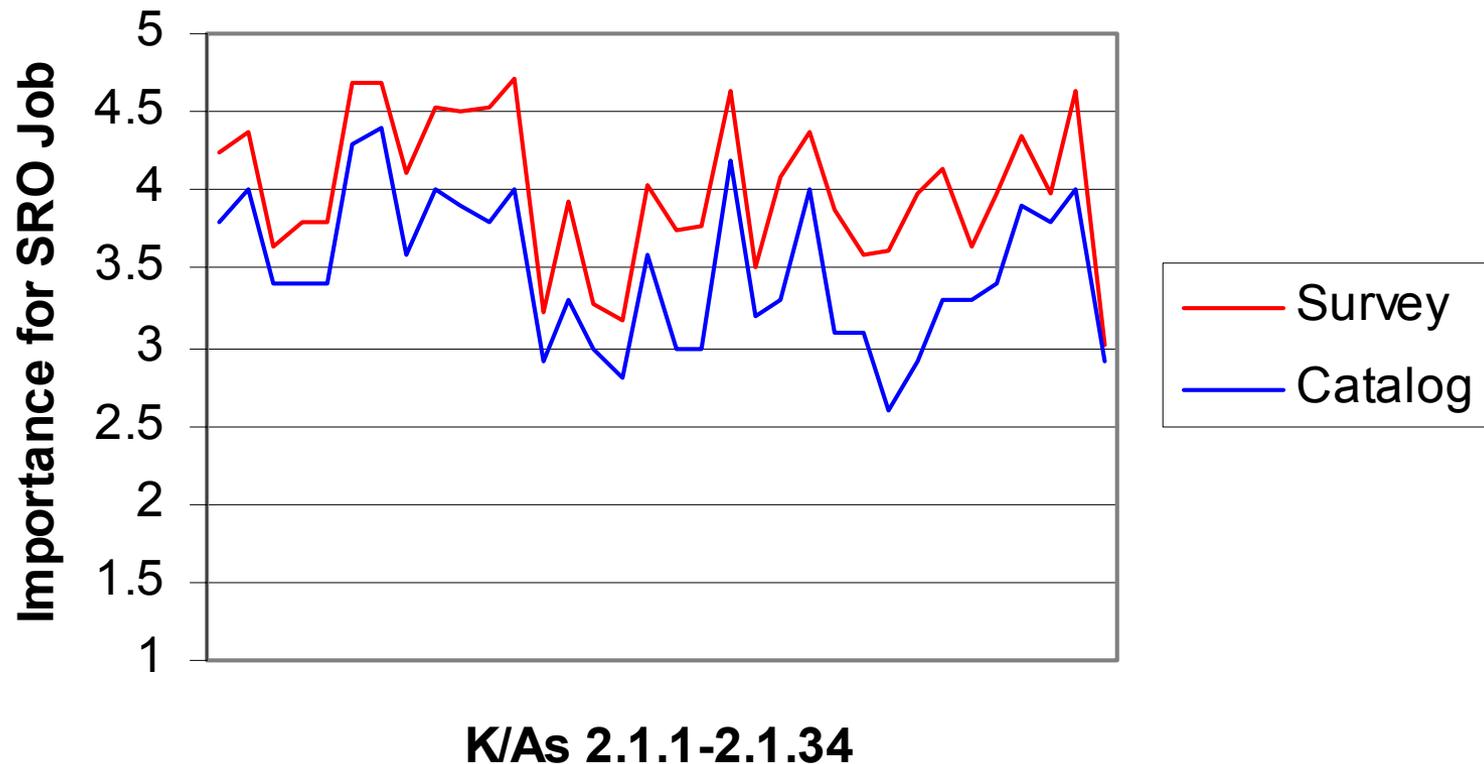
Survey and Catalog Importance Ratings



Overall Results for Importance Ratings

- Different groups of raters gave similar ratings
- Pattern of survey “importance to safety” ratings very similar to ratings in the current K/A Catalog
- Survey importance ratings are higher than those in the Catalog ($p < .001$)

Comparison of Survey and Catalog Importance Ratings for SRO Job



Overall Results for Importance Ratings

- Different groups of raters gave similar ratings
- Pattern of survey “importance to safety” ratings very similar to ratings in the current K/A Catalog
- Survey importance ratings are statistically higher than those in the Catalog
- 38 importance ratings, involving 28 K/As (22%), had standard deviations of 1.0 or greater

Overall Results for Importance Ratings

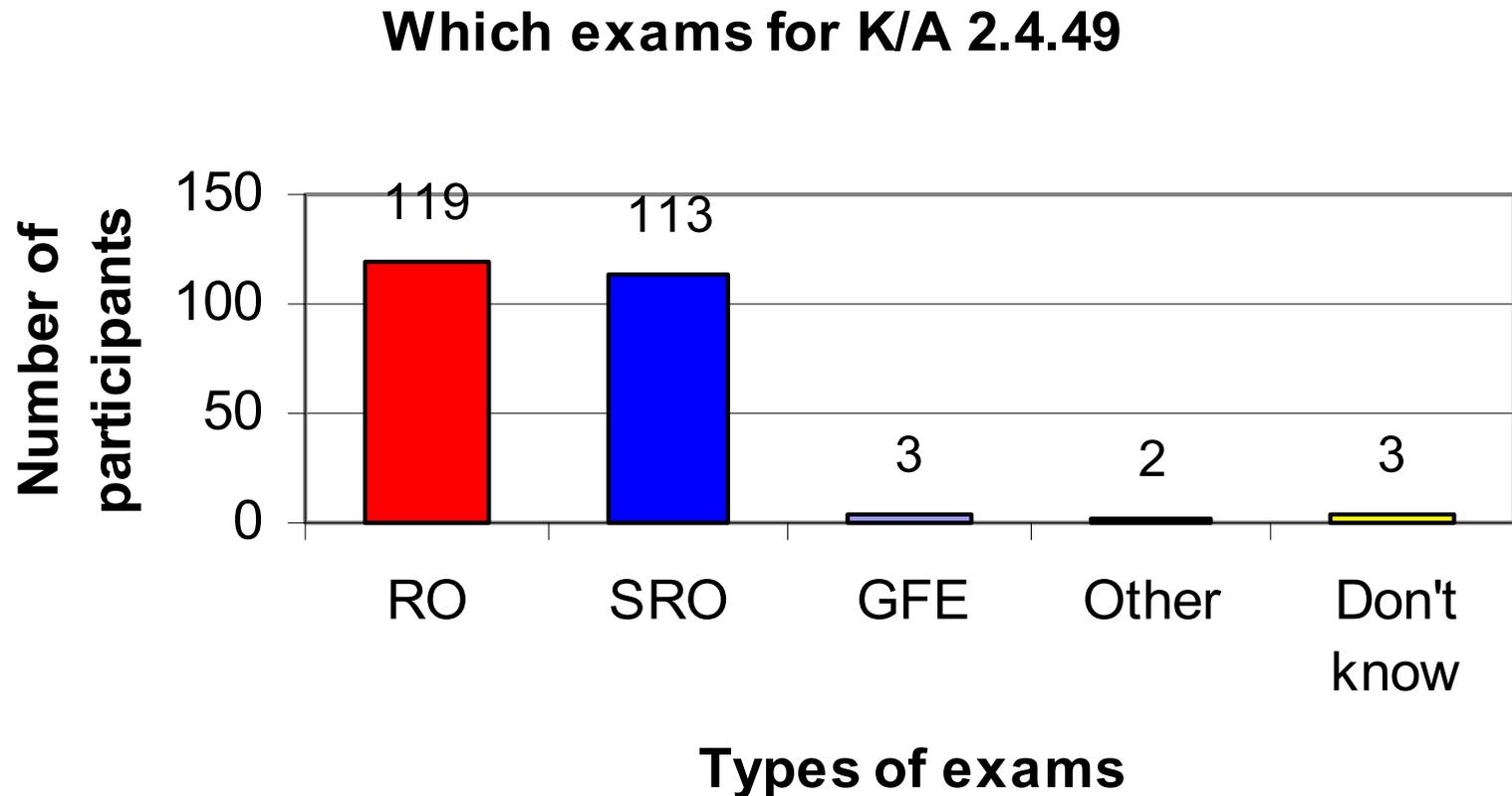
- 38 importance ratings (15%), involving 28 K/As (22%), had standard deviations of 1.0 or greater
 - A standard deviation of 1.0 indicates that about 1/3 of the participants rated the K/A at least 1 rating level higher or lower than the average rating for that K/A
 - Lowest standard deviation was .38, highest was 1.27

Which exam(s) should include questions that test this K/A?

Choices were:

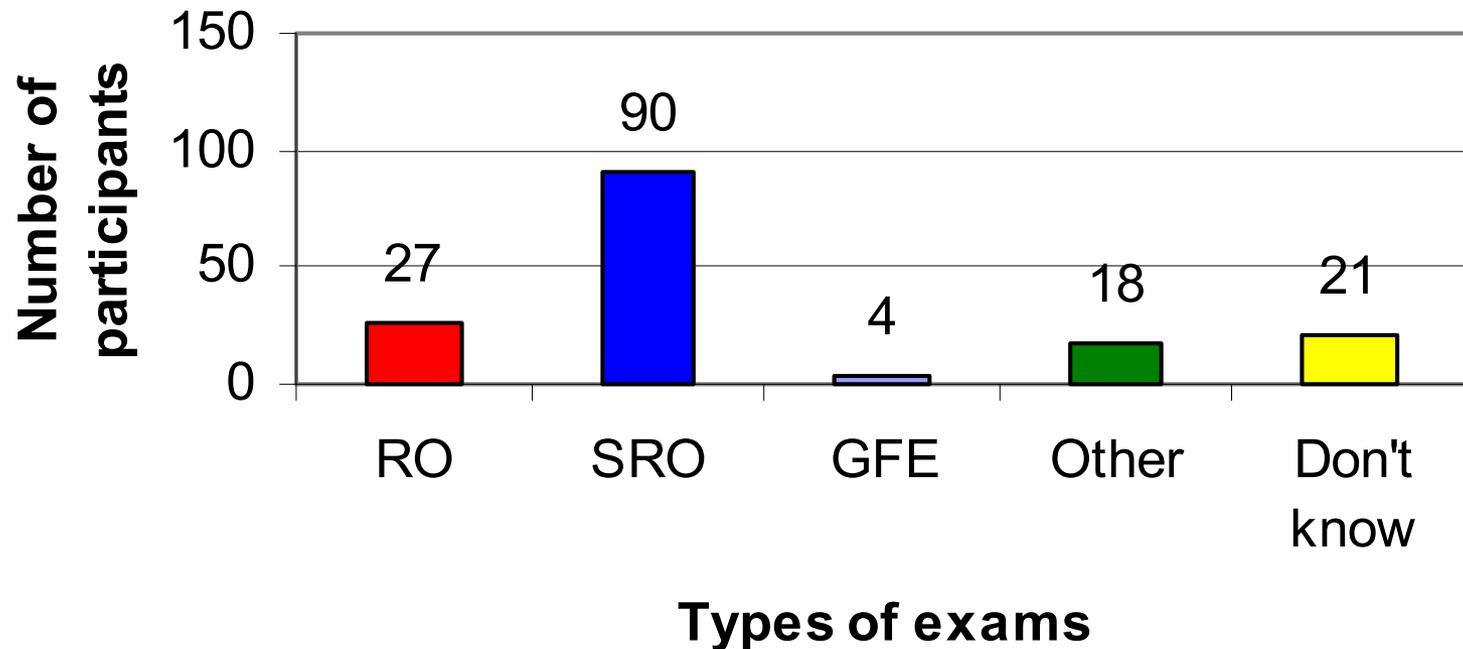
- RO site-specific exam
- SRO site-specific exam
- General Fundamentals Exam
- Other (GET, Rad Worker, etc.)
- Don't know

Example of a K/A acceptable for generating a question for either ROs or SROs

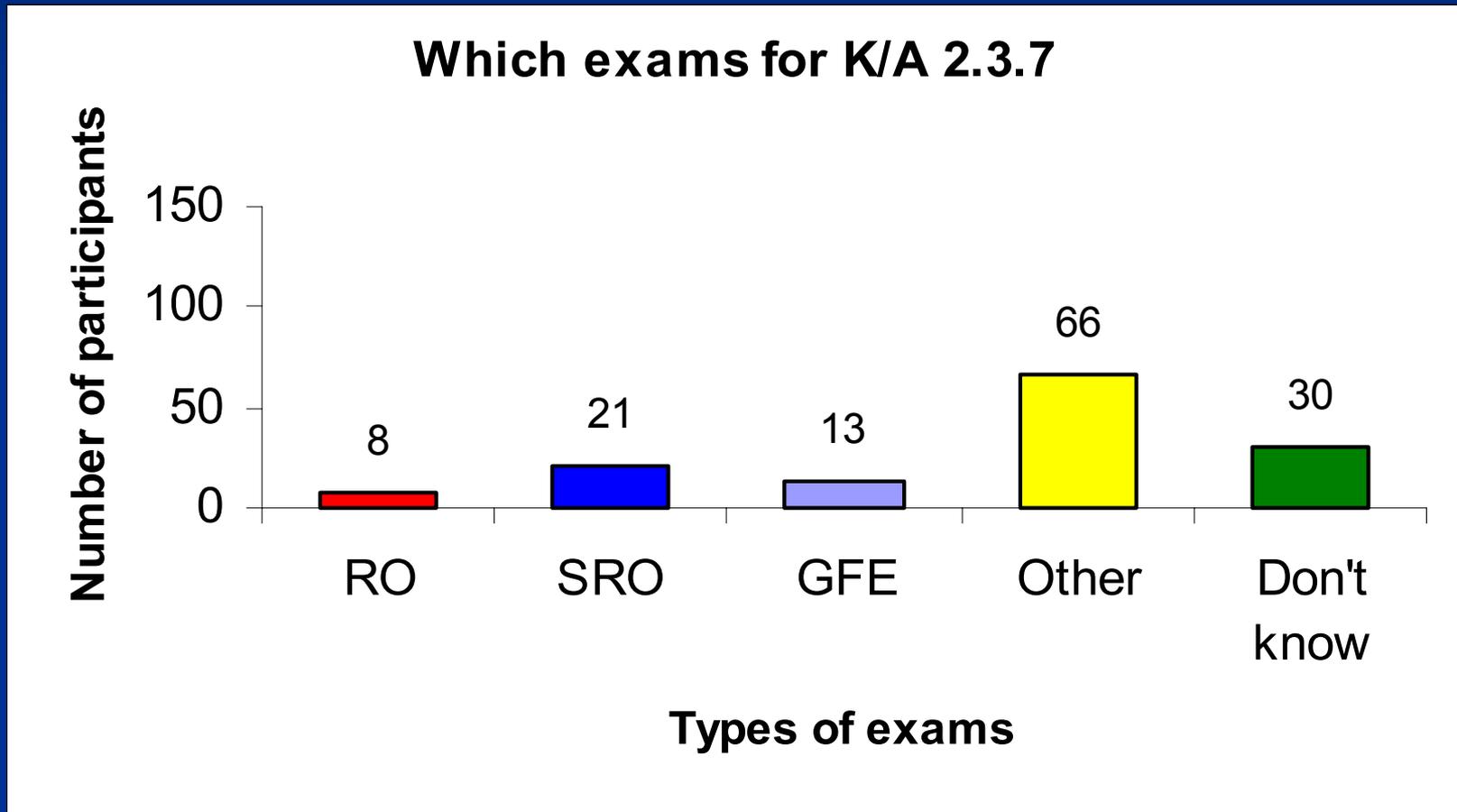


Example of a K/A acceptable for generating an SRO-only question

Which exams for K/A 2.2.8



Example of a K/A to exclude from the RO and SRO exams



Summary of Results from “Which exams” Question

- For 42 K/As (about 33%), the majority of raters voted against including questions to test the K/A on an RO site-specific exam
- For 7 K/As, the majority voted against testing the K/A on an SRO site-specific exam
- For 6 K/As, the majority voted against testing the K/A on either an RO or SRO site-specific exam
 - For 5, the most frequent choice was “other”
 - Most frequent choice was “GFE” for one

Five K/As to be Tested on “Other” Exams

- 2.1.13 - Knowledge of facility requirements for controlling vital / controlled access
- 2.1.16 - Ability to operate plant phone, paging system, and two-way radio
- 2.3.2 - Knowledge of facility ALARA program
- 2.3.5 - Knowledge of use and function of personnel monitoring equipment
- 2.3.7 - Knowledge of the process for preparing a radiation work permit

K/As that should NOT be tested on an RO Exam

- -9/34 in Conduct of Ops
- -19/34 in Equipment Control
- -7/11 in Radiation Protection
- -7/50 in Emergency Procedures/Plan

K/As that should NOT be tested on an SRO Exam

- -3/34 in Conduct of Ops
- -1/34 in Equipment Control
- -3/11 in Radiation Protection
- 0/50 in Emergency Procedures/Plan

How many K/As are “good” for testing in a licensing exam?

- Used the survey data to screen out K/As with the following characteristics:
 - Importance rating < 2.5 from survey
 - Standard deviation 1.0 or greater
 - Majority of participants did not vote for testing it on the RO-level exam
 - Or, majority did not vote for testing it on the SRO-level exam

Results from Combining the Survey Data

- 78 of the K/As (about 60%) would be acceptable for testing in an RO-level exam
- 106 of the K/As (about 82%) would be acceptable for testing in an SRO-level exam

Is the K/A the same for the RO and SRO job?

Response options:

- Yes, the knowledge or ability is the same for the RO and SRO jobs
- No, the knowledge or ability is different
- Don't know

Is the K/A the same for the RO and SRO job?

The raters indicated that the knowledge or ability required for 58 K/As (45%) in Section 2 is different for the RO and SRO jobs

K/As that require a Different Knowledge or Ability for the RO and SRO jobs

- 11/34 (32%) in Conduct of Ops
- 24/34 (71%) in Equipment Control
- 3/11 (27%) in Radiation Protection
- 20/50 (40%) in Emergency Procedures/Plan

Which section of the exam should include questions for this K/A?

Response options:

- Generic
- E/APE
- Systems
- Don't include
- Don't know

Number of K/As that should be in a Different Section of the Exam

- A majority of raters indicated that 83/129 K/As (64%) should be tested in a different section of the exam (other than Section 2)
 - 19/34 in Conduct of Ops
 - 13/34 in Equipment Control
 - 4/11 in Radiation Control
 - 47/50 in Emergency Procedures/Plan

Suggestions for New K/As

- Maintenance Rule and risk assessment
- Operations interface with the site Security Plan/Procedures
- Making operability calls
- Reportability requirements
- Severe accident management/core damage
- “Soft skills” (minimizing control room distractions
human error reduction techniques, team skills)

Summary

- The importance ratings for 22% of the current K/As are questionable
- There are many more K/As that are appropriate for testing in an SRO-level exam than in an RO-level exam
- The knowledge or ability required is different for ROs and SROs in 45% of the K/As
- 64% of the K/As would be better tested in another section of the written exam
- Radiation Protection subsection is particularly problematic

Recommendations for Revisions

- Evaluate the K/As with standard deviations >1.0 based on the comments and revise them for clarity
- Evaluate the K/As in which the knowledge or ability is different for ROs and SROs and develop new K/As for the RO job
- Revise Radiation Protection subsection
- Add suggested new K/As

What did we do with this information

- Two day meeting of a core team to review data from the survey.
- Divided the problematic KA's and evaluated each for deletion or revision.
- Lastly, gave a look to all the KAs in Section 2 to see if any that were not problematic needed revision.

Proposed Changes

- Replace subsection 2.3 with 10 new K/As derived from 10CFR41
- Delete 4 additional K/As because they are adequately addressed in other sections of the catalog.
- Revised 37 K/As to clarify their meaning.
- Moved 7 K/As related to fuel handling from subsection 2.2 to 2.1 for consistency.
- Moved 6 K/As from subsection 2.1 to 2.2.

Proposed Changes

- Moved 2 K/As from subsection 2.4 to 2.2
- Added one new K/A to subsection 2.1 related to reactivity management.

What's Next?

- Report being generated.
- Submit report to the NRC staff.
- Meeting with the NRC to discuss.
- If the NRC staff indicated the proposed changes appear to be acceptable, we will again ask for your help to rate the new and revised K/As.
- Package the new and revised K/As with the new importance rating and then give this to the NRC.