



# NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

**REVIEW OF SURVEY DESIGN AND SAMPLING PROCESSES  
WITH RECOMMENDATIONS FOR THE NETC COURSE  
SATISFACTION SURVEYS**

by

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September 2019

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## **ABSTRACT**

The schools under the Naval Education and Training Command's (NETC) cognizance are committed to producing the best trained Sailors for the fleet. It is important for NETC to collect accurate information regarding how well the training and education Sailors received at various schools apply to their current job duties. The current method for collecting this information is through assessment surveys that are disseminated to all graduates of the many schools NETC oversees and their supervisors at their first duty station. This method potentially faces sampling challenges and measurement errors due in part to DoN policies and regulations. These sampling challenges and measurement errors can then lead to inaccurate results and low confidence in those results.

In this report, we first examine the literature on survey design and management. To assist NETC in the goal of obtaining greater confidence in the assessment survey results, we then provide guidance regarding NETC's sampling procedures, survey design and implementation, and data processing. Finally, we summarize best practices in web survey design.

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## I. BACKGROUND

Current methods to create the surveys sent to graduates and their supervisors is based upon the job/duty task analysis (JDTA) for each rating that NETC educates in either an “A” or a “C” school. From this JDTA, NETC personnel work with subject matter experts to create a subset of approximately 20-30 tasks pertinent to that rate, and ask three questions about each task: how frequently does the Sailor perform it (rated on a “Daily”, “Weekly”, “Monthly”, etc. scale), how proficient is the Sailor at it (rated from “Needing training” to “Able to train others”) and how adequate was the training (rated from “Highly adequate” to “Not at all adequate”).

Current response rate to these surveys are fairly low, on the order of 20% return by the graduates and 10% for their supervisors. These low response rates are due to several difficulties in administering the surveys:

- The surveys are sent directly to the Sailors. NETC does not know (and it’s not practical to obtain) the identity of the graduates’ direct supervisors, and therefore sends the surveys to the graduates’ commands and trusts that the chain of command will direct them to the correct individuals. Most recently this has taken the form of the NETC command career counselor sending them to the command master chiefs and command career counselors of the ships.
- NETC wants the surveys to be taken after the graduate has been in their job for at least three months, and is precluded from surveying graduates more than twelve months after their graduation. Considering that most Sailors take a month to reach their next duty station, often spend three months in non-rate duties (e.g., working on mess decks), this leaves a smaller window to reach the graduates and their supervisors and have them take the surveys.
- The Office of General Counsel has ruled that the Sailors and their supervisors cannot be forced to complete these surveys. This ruling is despite the fact that reviewing the performance of Sailors serving under them is the responsibility of every Sailor in the Fleet.

NETC is wondering whether the low response rate means that the data derived from these surveys is inadequate. This issue is especially important now, because NETC is leading the Navy’s transition to Ready, Relevant, Learning (RRL). As RRL is phased in across the Fleet, NETC must have a method of determining whether this new training paradigm is producing Sailors at the same or higher levels from previous training methods. Thus, NETC needs an answer as to whether current survey methodology is sufficient, or it must attempt to find methods to overcome the causes of the low response rates.

Much is known about best practices in survey design and implementation (Bethlehem & Biffignandi, 2012) and some work has been done that specifically addresses surveys for military populations (Buttrey et al, 2011; O’Connor et al, 2011). In this report, we provide guidance regarding sampling procedures, survey design and implementation, and data processing that can be used to refine NETC’s current method, with the goal of obtaining greater confidence in the assessment survey results. We also will indicate areas in which

DoN policies and regulations are impeding NETC's ability to collect accurate information on these assessments from a representative sample.

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## **II. RELEVANT LITERATURE REVIEW**

In this literature review, we focus on topics directly related to the NETC's goals of attaining accurate survey assessment results from a representative sample of graduates and supervisors. sampling design, survey design, and data processing.

### **A. ATTAINING A REPRESENTATIVE SAMPLE**

It is important that the sample of survey participants is representative of the population of interest; in the case of NETC, the populations of interest are all graduates from NETC in the past several months and all personnel who currently are the direct supervisors to these graduates. Both sampling design and response rates can impact the extent to which a representative sample is attained.

#### **1. Sampling design**

Sampling design issues include undercoverage and overcoverage (Bethlehem & Biffignandi, 2012). Undercoverage occurs when some types of people are left out of the sampling design and therefore have no opportunity to be selected into the sample. If the types of people left out of the sampling design differ in important ways (perhaps by job type) from the people left in the sampling design, it leads to biased survey results. Importantly, increasing the sample size will not remove this issue.

Overcoverage occurs when the sampling design includes people who do not belong to the population of interest. For example, if the population of interest is the current direct supervisors of A-School graduates, but other supervisors also are included. Overcoverage also may lead to inaccurate survey results.

#### **2. Response rate**

The response rate is the proportion of people in the population of interest who actually participated in the survey. Typically, web surveys have lower response rates than telephone or mail surveys. A low response rate is not necessarily problematic unless an unrepresentative sample is acquired. A study that specifically examined why survey response rates had declined in the Navy was conducted by Newell, Rosenfeld, and Harris (2004). They asked Navy personnel why they thought response rates had declined. The top reasons were: (1) Results don't change anything/ my response does not matter; (2) Apathy, laziness, tired of surveys; (3) Survey length/time consuming; (4) Too busy/low priority; (5) Too many surveys. Officers were more likely to endorse this last item than enlisted personnel. These reasons are mirrored in other studies as well (see O'Connor et al, 2011). Suggestions for improving Navy response rate included: providing feedback about the survey results, having command involvement, making the surveys more concise, and providing incentives.



### 3. DoD and DoN policies that affect sampling design and response rates

Below we list the DoD and DoN policies that relate to surveys. We then discuss those policies that are most relevant to NETC course satisfaction surveys.

1. [32 CFR 219 101](#): Protection of Human Subjects
2. [CFR-2013-title32-vol2-part219](#): Protection of Human Subjects
3. [DoD 5400.7-R](#): DoD Freedom of Information Act Program
4. [DoD 5400-11-R](#): DoD Privacy Program
5. [DoD DIR 8910-1p](#): Management and Control of Information
6. [DoD INST 1100-13p](#): Surveys of DoD Personnel
7. [DoD INST 8910-01p](#): Information Collection and Reporting
8. [SECNAVINST 5211-5E](#): DoN Privacy Program
9. [SECNAVINST 3900 39E](#): Human Research Protection Program
10. [SECNAVINST 5270-42G](#): DoN Freedom of Information Act Program
11. [SECNAVINST 5720-47b](#): DoN Policy for Content of Publicly Accessible World Wide Web Sites
12. [OPNAVINST 5300-8C](#): Coordination and Control of Personnel Surveys

SECNAVINST 3900.39E section 4.b.(6), which governs Navy IRB requirements, says that, “Activities including program evaluation, customer satisfaction surveys, user surveys, outcome reviews, student end-of-course critiques, and other methods, designed solely to assess the performance of DoD programs where the results of the evaluation are only for the use of Government officials responsible for the operation or oversight of the program being evaluated and are not intended for generalized use beyond such program.” Therefore, NETC does not need to get IRB approval, nor does anything in the IRB instructions apply to NETC’s surveys.

One of the issues which hinders the ability of NETC to collect data is the various regulations limiting their data collection is the requirement that NETC cannot make completion of the surveys mandatory for either the trainees or their supervisors. A close reading of the instruction guiding the process of conducting surveys, OPNAVINST 5300-8C, indicates that interpretation may not be correct.

OPNAVINST 5300-8C section 1 states the purpose of that document is “To delineate policy and procedures for the **management, control, review, approval and licensing** [emphasis added] of Navy military and civilian surveys.” Note that the instruction covers many other areas besides the approval of surveys. This instruction gives NETC the ability to conduct these surveys without getting permission from the Navy’s survey manager for each survey.

OPNAVINST 5300-8C section 7.b states:

“Course evaluation surveys are exempt from **provisions** [emphasis added] of this instruction provided the survey deals specifically with content provided in or the processes used to provide the course in question and/or the survey is conducted while the course is in session. Course impact evaluations are also exempt from the

provisions of this instruction provided such evaluations deal only with materials and events covered by the training received, are sent only to the students and supervisors, and are administered no more than one year following the course termination.” These are the type of surveys that NETC conducts, so they are exempt from any provision of the instruction.

The apparent rationale prohibiting NETC from making the surveys mandatory to complete appears later in the same instruction (section 7.d), where it states that:

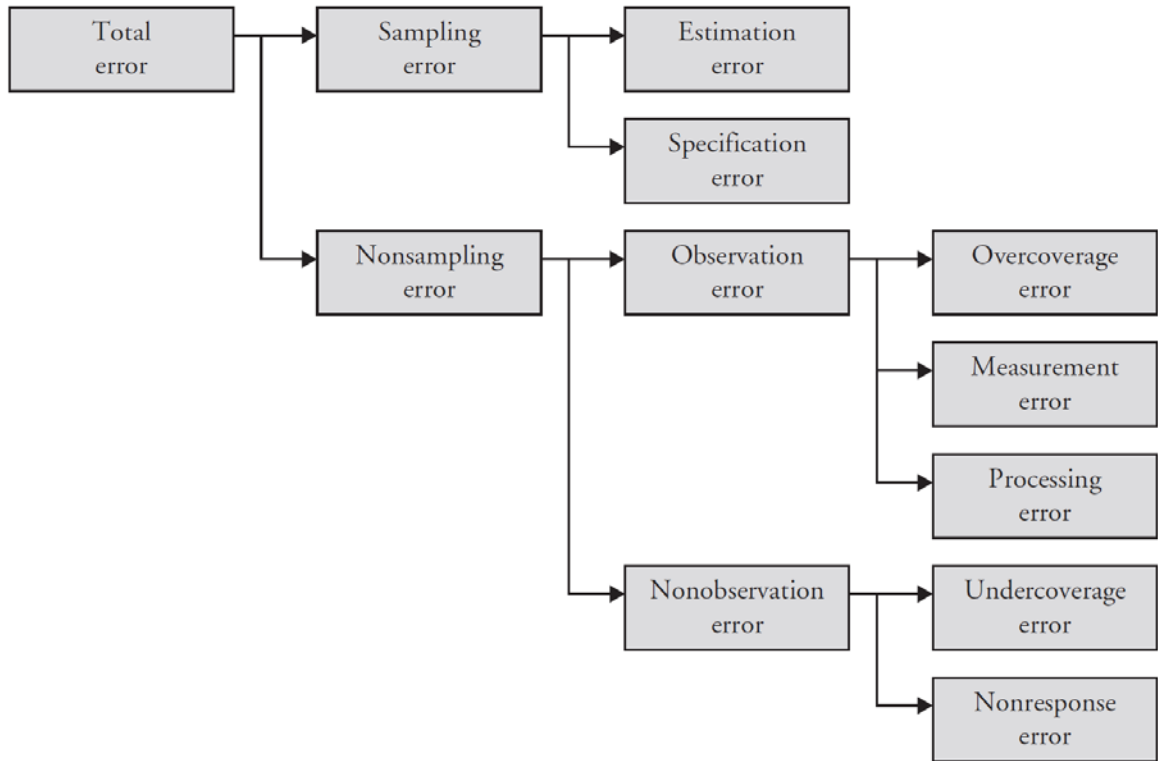
“All surveys of Navy Sailors, including those exempted from **approval** [emphasis added] under this instruction, must conform to these basic requirements:

- (1) Participation in the survey must be voluntary; confidentiality of the individual responses should be ensured;
- (2) A Privacy Act Statement (PAS) should be included at the beginning if demographic or other identifying information is collected (e.g., pay group, race, etc.); and
- (3) Institutional Review Board (IRB) review shall be conducted if the survey constitutes human subjects research as defined by reference (d). Focus groups that involve more than 10 personnel require review and approval per guidance from OMB and DoD. Focus groups and interviews for the purpose of development and pretest of survey questionnaires or for clarification of survey results can be reviewed and approved as part of the larger survey project.”

By the letter of this instruction, NETC’s surveys should be exempt from being voluntary. Section 1 states that OPNAVINST 5300-8C is for far more than approval of surveys – it also applies to management, control, review and licensing of surveys. Section 7.d states that surveys exempted from “approval” under this instruction must be voluntary. However, section 7.b states that course evaluation surveys, such as those NETC wants to conduct, are exempt from provisions of this instruction. Therefore, such surveys should be exempt from ALL the provisions of the instruction, including the one requiring voluntary participation.

## **B. ATTAINING ACCURATE DATA**

Attaining accurate data not only requires a representative sample, as discussed above, but also the reduction of measurement error. Figure 1, from Bethlehem & Biffignandi (2012), outlines the types of errors that can lead to inaccurate survey results. Definitions of these terms can be found in Section Vs. Sampling error, overcoverage error, undercoverage error, and nonresponse errors were covered in the sections above. In this section, we focus on two common forms of measurement and processing errors -- memory errors and satisficing.



**Figure 1. Survey errors. From Bethlehem & Biffignandi (2012) Figure 4.2, p. 100.**

## 1. Memory errors

Participants often have difficulty recalling the frequency with which they complete certain tasks. The longer the requested time period or the more frequently the event occurs, participants are less likely to effortfully try to count the frequency of occurrences and instead rely on estimation, normative expectations, and contextual information provided in the survey to make their responses (Schwarz, 2007). Two common types of memory errors are omission (when the participant has forgotten certain events) and commission (participants include events that occur outside the requested time period (Bradburn, Rips, & Shevell)). Frequency questions that ask about rate of occurrence rather than number of occurrences may reduce memory errors because a common strategy employed by participants is to first think about the rate of occurrence and then multiply that rate by the requested time period to derive their response (Bradburn, Rips, & Shevell). Aided recall cues, such as providing an image of the task, may also reduce memory errors particularly for requested time periods of longer durations (Sudman & Bradburn, 1973).

## 2. Satisficing

Satisficing is a form of non-random measurement error and occurs when participants provide responses with minimal effort, for example, giving the same answer on all questions, regardless of the question content. Satisficing can occur as measurement error,

processing error or nonresponse error. The likelihood of satisficing occurring depends on three factors (Bethlehem & Biffignandi, 2012):

- 1) Task difficulty: such as difficulty in interpreting question and mentally coming up with information relevant to the response, how long it takes participants to read the questions, if there are distractions present.
- 2) Participant ability: both general cognitive ability and that the person actually has an opinion on the topic.
- 3) Participant's motivation: beliefs that the survey is important and have useful consequences, participant's level of fatigue while completing survey, aspects of survey administration that impact motivation (length, ease of use, etc.).

Researchers at the Naval Postgraduate School analyzed over 10 years of Command Safety Assessment Survey (CSAS) data from U.S. Naval aircrew (Buttrey et al, 2010; O'Connor et al, 2011). Satisficing behavior was demonstrated in multiple ways. In general, faster survey completion times were associated with increased frequency of modal responses. Additionally, for construct validity reasons, some questions appear twice in the survey—responses to the question the first time it appeared were inconsistent with responses to the same question the second time it appeared. A third indicator of satisficing was that there was very little item-to-item variability in responses: on 8% of the completed surveys, the same Likert rating response was endorsed on all questions; on 24.9% of completed surveys only 2 Likert rating responses were endorsed for all questions, and only on 31% of completed surveys were at least four Likert rating responses endorsed.

Completing the CSAS became mandatory in 2004, and while satisficing behavior was found throughout the 10-year period, it was more pronounced in the mandatory completion years. For example, endorsement of the modal response increased noticeably once the CSAS became mandatory. These findings suggest that mandatory surveys may not be the solution to acquiring results that accurately reflect the population of interest.

### **C. DATA PROCESSING**

Data processing is essential for ascertaining whether a representative sample and accurate data were attained. Data processing entails collecting and analyzing paradata, data that's generated while participants complete the survey. Examples of paradata include the time taken to answer each question, which keys are pressed, and whether or not participants used any help functions. There are two types of paradata, server-side and client-side. Server-side paradata is collected by the survey software, and can include information such as survey download time, browser type and operating system used, number of times survey page was visited, time spent per visit. Questions that can be addressed by server-side paradata include (Bethlehem & Biffignandi, 2012):

- Do participants complete the survey in 1 session or multiple sessions?
- How do they navigate through the survey?
- Do they use the print function?

Client-side paradata is collected by software on the participants' computers and can provide information regarding the order in which questions were answered, time to answer each question, mouse movements and key presses. Collecting client-side paradata usually requires a Javascript code on the survey.

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### **III. GUIDANCE ON NETC SAMPLING PROCESSES, RESPONSE RATES, SURVEY DESIGN, AND DATA PROCESSING**

#### **A. SAMPLING PROCESSES**

- Goal: To increase the number of people in the population of interest who actually receive the survey request; to reduce potential undercoverage or overcoverage.
- Comments: Due to the current method for disseminating the survey to the supervisors, the supervisor who receives the survey may not be the direct/correct supervisor for the targeted graduate. However, NETC cannot ascertain how often the wrong supervisor completes the survey. This issue leads to concerns of potential undercoverage of direct supervisors and overcoverage of non-direct supervisors.
- Recommendations:
  - In the email that is sent directly to the graduate, provide 2 links, one that the graduate uses to complete the survey; one that they send to their supervisor. This way, NETC has confidence that the survey was sent to the correct supervisor.

#### **B. RESPONSE RATE**

- Goal: To ensure an appropriate response rate is achieved for both the graduate and supervisor surveys.
- Comments: Adequacy of the response rate is tied to sample representativeness. A 10% response rate may be sufficient if the sample is representative. Making completion of the survey mandatory can be problematic both in terms of DoD policies and instructions and in terms of increasing the likelihood of satisficing.
- Recommendations:
  - Ask CRESST to provide descriptive statistics on survey demographic information to ascertain if the sample of responders is representative of the population of interest. If the sample is representative, then the low response rate is of less concern.
  - Per results from Newell et al, (2004), offering an incentive, such as recommendation for a liberty card to those graduates and supervisors who complete the survey, may increase response rates.
  - Per results from Newell et al, (2004), providing a summary of the survey results and any changes to trainings based on the survey results to the survey respondents may, in the long term, increase response rates. This information also can be used in the survey request to future cohorts of graduates and supervisors as a way to demonstrate that NETC takes their opinions seriously.

### **C. SURVEY DESIGN**

- Goal: to increase accuracy of responses and reduce measurement errors
- Comments:
  - The majority of the survey design follows best practices, including: the survey follows a logical order, only one question is shown at a time on the web version, the response options for the frequency and proficiency questions are clear and logically spaced.
  - However, some wording is a little confusing. For example, in the adequacy and quality question, no distinction between ‘adequacy’ and ‘quality’ is provided. The definition for the ‘Excellent’ response option is unusual and may confuse participants. Finally, on a few questions, verb tense inconsistency occurs.
  - Additionally, due to the timing of when the survey can be distributed, there are potential memory effects on the frequency and adequacy/quality of training questions. However, this appears to be inherent in survey administration limitations which are outside of NETC’s control.
  - The Appendix provides specific comments on a supervisor survey. Many of these comments also apply to the graduate surveys.
- Recommendations that apply to both graduate and supervisor surveys:
  - On the adequacy/quality of training questions, remove the word “adequacy” and clarify the definition for the ‘Excellent’ response option, perhaps to “training enabled me to perform all parts of the skill competently”
  - On the web version of the survey: provide a link next to each response option or to the center right of all response options that when clicked on, provides the definition for each response option
  - On the general questions about your/ your subordinate’s performance section, use the same verb tense used in the question for all response options
  - To reduce potential memory effects, start the frequency questions with the sentence “Think back during your time in this job.”
  - To reduce potential memory effects for adequacy/quality of training questions start these questions with a sentence “Think back during your time in <NAME OF SCHOOL OR TRAINING>.”

### **D. DATA PROCESSING**

- Goals: To be able to ascertain sample representativeness, extent to which satisficing occurs, improve item nonresponse rates.
- Comments: Data processing has not yet been completed. Results from data processing will enable NETC to determine whether survey results come from a sample that is representative of the population of graduates/supervisors. Data



processing results also will indicate if satisficing and/ or item nonresponse occurs and on which questions.

- Recommendations: Ask CRESST to do the following (note: some recommendations are repeated from above):
  - Descriptive statistics on demographics to ascertain if sample of responders is representative of the population of interest. If the sample is representative, then the low response rate is of less concern.
  - Checks for satisficing as described above in Section II.B.2.
  - For surveys completed on the web: analyze paradata for survey completion times, time to complete each question; item response rates
  - Analyze supervisor responses to see if proficiency responses correspond with quality of training questions. If they do correlate, it would indicate that supervisors are using the proficiency rating to respond to the training question. In this case, the training questions could be removed or changed. For example, to the extent to which supervisors had to train up the subordinate on that task would inform NETC as to whether the subordinate's level of proficiency is due to their training or due to the supervisor's training.

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## IV. GENERAL WEB SURVEY DESIGN STRATEGIES

The following information is adapted from Bethlehem & Biffignandi's (2012) *Handbook of Web Surveys*.

### A. STEPS FOR CREATING WEB SURVEYS

- 1) Conduct pretest(s) on small number of people from the population of interest and refine format and questions as necessary
- 2) Pay attention to the way the survey is presented, how potential respondents are approached and how the survey is presented to them.
- 3) Include question-specific instructions. Use the 'Help' button.
- 4) Pay attention to the technical aspects of the survey software:
  - a. Ensure that respondents' computers/ hardware and internet version on which they will respond to the survey have the ability to run that survey software and that visualization of questions is accurate.
  - b. Use identification codes to ensure that only people from the target population have access to the survey and that respondents only complete the survey once.
  - c. Keep respondents motivated while completing the survey by providing progress indicators, such as a progress bar. When progress exceeds respondent's expectations, the progress indicator feature can improve completion rates.
  - d. Make it attractive to complete the survey to aid respondents' motivation to continue to answer survey questions. For example, place questions that will interest the respondents early in the survey.
- 5) Have a well-organized survey management for design and data collection phases: pay attention to how paradata (e.g., data about time to complete each response, etc.) will be collected.

### B. TYPES OF QUESTIONS AND RESPONSE FORMATS

In this section, we describe the two basic types of survey questions and list which response formats should be used with each question type. One basic type of survey question is closed question, in which a list of possible answers is provided. In other words, participants are not free to come up with their own answer. Closed questions are used when researcher wants to ensure that respondents don't overlook a possible answer simply because it did not come immediately to mind. An advantage of closed questions is that it allows the researcher to define their classification of possible answers, leading to better control over data processing. They typically are employed to measure categorical or ordinal variables.

#### 1. Closed questions

Numerous response formats can be used with closed questions:

- **Radio buttons:** should be used for closed questions when respondents can only select one answer option. Answer options must be mutually exclusive and as a whole, cover all possible answers. Answer options should be presented in a logical order. Keep in mind that radio buttons are one size, regardless of the font size of text attached to it, so be sure to select a font that's consistent with the radio button size.
- **Likert scale format:** description of response categories/levels must be as accurate as possible. Respondents may differ on their opinion on the difference between 'agree' and 'strongly agree' and 'sometimes' vs 'often.' Respondents find it more cognitively difficult to process numbered Likert scales (i.e., "on a scale from 1 to 5..."). When Likert scales contain negative values, it can induce response error as respondents interpret the low end of the scale as more extreme than when only positive values are used.
- **Matrix questions:** Should be used sparingly. Need to be aware that depending on device and internet version, not all options may show up on the respondent's screen, causing response error. Also, can lead to satisficing. Pros: take less space than set of single questions and provide respondents' greater overview of those set of questions.
- **Drop-down boxes:** Have many disadvantages and should be avoided. Requires more actions per question than radio buttons. Can cause primacy effects if only part of the list is visible to the respondent.
- **Check boxes:** Used for answering closed questions when more than one answer is allowed. This format should include a "none of the above" option. If the list of answer options is long, then primacy effects and satisficing may occur.

An aside about "Don't know" or "no opinion" options: "Don't know" or "no opinion" answer options should only be used for opinion or attitudinal questions and NOT for factual questions. Use of the "don't know/no opinion" option is a double-edged sword – on the one hand, this option can lead to satisficing; on the other hand, this option must be used for opinion or attitudinal questions to avoid respondent frustration. If used, the "don't know/no opinion" option should be placed at the bottom or far right of the option list as participants tend to focus on the visual middle of the answer options.

## 2. Open questions

Used when the researcher wants the participant to answer the question in their own words. This question type should also be used when there are a very large number of possible answers or when the researcher doesn't know all of the possible answers. The advantage of the open question format is that participants answer in their own words and aren't influenced by options offered by researcher. Open questions can also obtain information that would not be attainable otherwise. The disadvantages are that these questions typically take more time for participants to answer and data analysis of these responses requires a lot of data processing in terms of coding and categorizing the answers. The researcher should keep in mind that specific, focused questions are necessary to get focused responses.

Response formats used for open questions are constrained to text boxes and text areas.

- **Text boxes** provide one line of text for brief responses
- **Text areas** provide space for a lengthy response. Text areas tend to lead to longer responses.
- **Mixed closed and open question format:** a mixed closed and open format in which a list of possible answers is provided, including “Other, please specify.”

### C. VISUAL DESIGN FACTORS IN WEB SURVEY DESIGN

The visual design of the survey affects how participants interact with the survey and thus impacts response rates, item nonresponse, measurement and processing errors (Fricker, 2012). Visual design factors include configuration of answer spaces, the use of color and images, as well as graphic, symbolic, and numerical language.

- **Answer spaces:** Answer spaces should stand out visually so that they are easy to spot and it should be clear to participants what is expected of them. Instructions should be included where necessary (as determined by pretesting). Consistency is integral. Use the same type of answer space for the same types of questions. It can be helpful to frame answer spaces in a contrasting color from the background, particularly when the question is a ‘filter question’ that depending on the response, will lead to different subsequent questions. If participants have to provide values or amounts, indicate measurement unit and ensure that the answer space indicates the appropriate measurement unit. For example, for thousands of dollars, 000 should be placed to the right of the answer space; if dollars, .00 should be placed to the right of the answer space.
- **Use of color:** white answer spaces should be displayed against a shaded or light-colored background. In this case, framing around answer spaces is not necessary.
- **Use of images:** The use of images has advantages and disadvantages. Advantages include: improving participation, clarifying the intent of the question, acting as a recall aid to reduce memory error. It’s important that images are used in a neutral way. A disadvantage is that use of non-neutral images can lead to measurement error. For example, an image of a piece of equipment would be a neutral image; an image of the same piece of equipment in a particular setting may suggest that the participant recall only the times they used that equipment in that particular setting.
- **Graphic language:** Graphic language includes the font type, font size. Easily read font type and size reduces participant burden and improves comprehension.
- **Symbolic language:** Symbolic language, such as arrows so that participants answer questions in the correct order, are typically used for navigation purposes. Good symbolic language can help reduce item nonresponse.
- **Numeric language:** Numeric language refers to the numbering of questions and answer options (if needed).

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## V DEFINITIONS OF COMMON SURVEY TERMS

**Acquiescence:** A form of measurement error in which participants tend to agree with statements, regardless of the content.

**Estimation error:** Error associated with statistical results, such as the mean, due to natural random variability from sample to sample. Acknowledged through the use of confidence intervals.

**Item nonresponse:** A type of nonresponse in which a participant does not answer all questions or items. The unanswered question/item has a nonresponse.

**Likert scale:** A type of closed question that entails a rating scale.

**Measurement error:** When the participant's survey response differs from their true response.

**Memory error:** A type of measurement error caused because participants do not accurately recall the requested information, particularly if it occurred a while ago or is not considered important by the participant.

**Non-differentiation:** For questions with the same set of response options, selecting the same answer for all questions regardless of question content.

**Nonobservation error:** Nonsampling error in which intended measurements cannot be calculated due to undercoverage or nonresponse errors.

**Nonresponse:** Occurs when either a participant does not complete the survey (unit nonresponse) or a participant does not answer all the questions in the survey (item nonresponse).

**Nonsampling error:** Errors that can occur even if the entire population of interest participates in the survey.

**Observation error:** Error made during the process of data collection, and/or during the recording or processing of participants' responses.

**Overcoverage error:** Occurs when people outside of the population of interest complete the survey.

**Paradata:** Data about the process by which respondents completed the survey, such as time spent to respond to each question, and which internet browser was used.

**Primacy effect:** Tendency for participants to select response options presented at the beginning of a list.

**Probability sampling:** Each potential respondent has the same probability of being recruited to participate in the survey.

**Processing errors:** Type of nonsampling error in which the participant accidentally records the wrong response.

**Recency effect:** Tendency for participants to select responses at the end of a list of options.

**Sampling error:** Error in statistical results because the results are based on only a subset of the population of interest rather than the entire population of interest.

**Satisficing:** Respondents provide answers with minimal effort.

**Self-selection survey:** Survey in which the sample is obtained by potential participants deciding to participate in the survey.

**Specification error:** Occurs when the assumption that each potential participant has the same probability of being recruited into the survey is not met.

**Straight-lining:** Giving the same answer on all questions, for example, checking the same column for all questions.

**Undercoverage:** Certain groups of people are left out of the sampling design and therefore have no opportunity to be selected into the sample. These groups will not be represented in the survey results.



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# APPENDIX: SPECIFIC COMMENTS ON PRE-AE-SUPERVISOR-C-602-2039-V1

## Question Block—1

### 1. INFORMATION: NETC Questionnaire on Training

#### PURPOSE:

Your answers to this questionnaire will assist the Naval Education and Training Command (NETC) to evaluate and improve courses by better matching training to the Navy's mission. You will also help us to evaluate future Navy Block Learning and Ready Relevant Learning implementation. Your voluntary participation about your experiences as a supervisor of a graduate of a NETC Course of Instruction will show us areas where we do well and those where we need to improve. We need your honest opinions. Thank you for taking the time to complete this questionnaire carefully.

#### PRIVACY ACT STATEMENT:

Authority to request this information is granted under 5 U.S.C. 301 and the Department of the Navy (DON) Regulations.

#### ROUTINE USES:

These questionnaires will be analyzed by the UCLA National Center for Research on Evaluation, Standards, and Student Testing (CRESST) which will share summary results with the Center for Naval Aviation Technical Training and the Naval Education and Training Command (NETC).

#### CONFIDENTIALITY:

Your responses are strictly confidential and will be statistically combined with the responses of others into a summary report.

#### PARTICIPATION:

Completion of this questionnaire is voluntary; however, your answers are very important to the Fleet feedback process.

#### QUESTIONS:

For questions concerning questionnaire execution, contact NETPDC QMP at [laura.davis.ctr@navy.mil](mailto:laura.davis.ctr@navy.mil).

For questions concerning questionnaire content, contact Mr. Bill Goforth at [william.d.goforth@navy.mil](mailto:william.d.goforth@navy.mil).

For questions concerning the training assessment program, contact NETC N511 at [dean.a.taylor@navy.mil](mailto:dean.a.taylor@navy.mil).

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## Question Block—2

### 2. INSTRUCTIONS FOR COMPLETING THIS QUESTIONNAIRE

As a first-level supervisor, you will be asked questions about the various tasks your subordinate performs as part of the rating and general questions about your subordinate being an AE. Then you will be asked for general feedback on this questionnaire. Finally, you will be asked a few background questions about you and your subordinate.

Read each question carefully and select the response that best reflects your knowledge or opinion. Click the Next button to go to the next question. Do not close your browser until you receive the "Questionnaire Complete" message.

Note: This questionnaire is unclassified and all answers provided should be at the unclassified level.

The questionnaire should take you approximately 30 minutes to complete.

Thank you for your participation.

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**Question Block—31**

**3. About your subordinate:** Please provide the full name of the graduate being evaluated. Please fill in the information completely and accurately.

Enter as last name, first name, rate (if applicable).

.....

**Question Block—3**

**CRITICAL DUTIES/TASKS**

The following questions focus on **15 critical tasks** that your subordinate should be able to perform following formal training for one of two jobs. Each task statement consists of 3 sub-areas (**frequency, proficiency, and adequacy and quality**). You will have the opportunity to provide any additional comments once you have completed the questions for all of the task statements.

**Aviation Electrician's Mate Organizational Level Technician**

**Task 1: Test Aircraft Electrical Systems**

**How frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

How often would this be a generic answer, rather than specifically about this particular subordinate?

**4. Rate your subordinate's proficiency** in performing this task

- a. Very limited (Can do no part of the task.) Needs to be trained to do the task
- b. Limited (Can do some or simple parts of the task.) Needs further training and close supervision when doing the task
- c. Somewhat proficient (Needs help on the hardest parts of the task.) Needs general supervision
- d. Competent (Can do the complete task but some parts are difficult.) Needs only a spot check on completed work
- e. Highly competent (Can do the complete task quickly and accurately.) Can teach others to do the task

**5. Rate the adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate (Training did not teach my subordinate to perform any parts of the task.)
- b. Partially adequate (Training taught my subordinate to perform some but not all parts of the task.)
- c. Adequate (Training was good enough for my subordinate to perform all parts of the task.)
- d. Good (Training was understandable and prepared my subordinate to perform all parts of the task.)
- e. Excellent (Training was greatly more than needed to perform the task.)

What's the difference between adequacy and quality?

Hard to see how a supervisor would know whether or not a subordinate's training was understandable or if the subordinate's training was greatly more than needed.

.....

**Question Block—4**

**Aviation Electrician's Mate Organizational Level Technician**  
**Task 2: Troubleshoot Aircraft Electrical Systems**

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

Is the web survey version designed to skip the proficiency and adequacy and quality questions if the supervisor answers "Never" to the frequency question?

6. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

For all proficiency questions, it would be helpful to provide a link next to each response option so that if they click on the link, it provides the definition of that term.

7. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

Same comment as above.

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**Question Block—5**

**Aviation Electrician's Mate Organizational Level Technician**  
**Task 3: Troubleshoot Lighting System Components**

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

8. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

9. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School
- a. Inadequate
  - b. Partially adequate
  - c. Adequate
  - d. Good
  - e. Excellent

.....

**Question Block—6**

Aviation Electrician's Mate Organizational Level Technician  
Task 4: Troubleshoot Master Caution Advisory Systems

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

10. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

11. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—7**

Aviation Electrician's Mate Organizational Level Technician  
Task 5: Troubleshoot Flight Director Indicators (FDI)

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

12. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

13. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....  
**Question Block—8**

Aviation Electrician's Mate Organizational Level Technician  
Task 6: Maintain Aircraft Power Plant Electrical Components

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

14. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

15. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....  
**Question Block—9**

Aviation Electrician's Mate Organizational Level Technician  
Task 7: Troubleshoot Aircraft Power Plant Electrical System Components

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

16. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

17. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—10**

Aviation Electrician's Mate Organizational Level Technician  
Task 8: Troubleshoot Propeller Electrical Systems

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

18. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

19. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—11**

Aviation Electrician's Mate Organizational Level Technician  
Task 9: Troubleshoot Flight Control System Components

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

20. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

21. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—12**

Aviation Electrician's Mate Organizational Level Technician  
Task 10: Troubleshoot Compass and Inertial Navigation Systems

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

22. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

23. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—13**

Aviation Electrician's Mate Organizational Level Technician  
Task 11: Troubleshoot Aircraft Wiring Systems

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily



24. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

25. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent



**Question Block—14**

Aviation Electrician's Mate Organizational Level Technician  
Task 12: Maintain Aircraft Batteries

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

26. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

27. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent



**Question Block—15**

Aviation Electrician's Mate Organizational Level Technician  
Task 13: Maintain Aircraft Electrical Power Distribution Systems and Components

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

28. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

29. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—16**

Aviation Electrician's Mate Organizational Level Technician  
Task 14: Test Aircraft Batteries

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

30. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

31. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—17**

Aviation Electrician's Mate Organizational Level Technician  
Task 15: Troubleshoot Aircraft Transformer Rectifiers, Converters, and Inverters

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

32. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

33. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—18**

Aviation Electrician's Mate Intermediate Level Technician  
Task 1: Troubleshoot Master Caution Advisory Systems

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

34. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

35. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—19**

Aviation Electrician's Mate Intermediate Level Technician  
Task 2: Maintain Liquid Quantity Indicators

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

36. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

37. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—20**

Aviation Electrician's Mate Intermediate Level Technician  
Task 3: Troubleshoot Aircraft Instruments

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

38. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

39. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—21**

Aviation Electrician's Mate Intermediate Level Technician  
Task 4: Troubleshoot Flight Director Indicators (FDI)

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

40. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

41. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

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**Question Block—22**

Aviation Electrician's Mate Intermediate Level Technician

Task 5: Troubleshoot Pitot Static Instruments

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

42. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

43. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—23**

Aviation Electrician's Mate Intermediate Level Technician

Task 6: Troubleshoot Aircraft Power Plant Electrical System Components

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

44. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

45. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—24**

Aviation Electrician's Mate Intermediate Level Technician  
Task 7: Troubleshoot Flight Control Systems Components

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

46. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

47. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

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**Question Block—25**

Aviation Electrician's Mate Intermediate Level Technician  
Task 8: Troubleshoot Flight Surface Indicating Device Components

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

48. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

49. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

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**Question Block—26**

Aviation Electrician's Mate Intermediate Level Technician

Task 9: Troubleshoot Aircraft Electrical Power Distribution Systems and Components

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

50. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

51. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—27**

Aviation Electrician's Mate Intermediate Level Technician

Task 10: Troubleshoot Bus Power Control Units (BPCU)

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

52. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

53. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—28**

Aviation Electrician's Mate Intermediate Level Technician  
Task 11: Troubleshoot Generator Control Units (GCU)

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

54. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

55. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—29**

Aviation Electrician's Mate Intermediate Level Technician  
Task 12: Build Aircraft Wiring Harnesses

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily



56. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

57. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—30**

Aviation Electrician's Mate Intermediate Level Technician  
Task 13: Repair Aircraft Wiring Harnesses

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

58. Rate your subordinate's **proficiency** in performing the task

- a. Very limited
- b. Limited
- c. Somewhat proficient
- d. Competent
- e. Highly competent

59. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School

- a. Inadequate
- b. Partially adequate
- c. Adequate
- d. Good
- e. Excellent

.....

**Question Block—31**

Aviation Electrician's Mate Intermediate Level Technician  
Task 14: Troubleshoot Aircraft Wiring

How **frequently** does your subordinate perform this task?

- a. Never
- b. Annually
- c. Semi-Annually
- d. Quarterly
- e. Monthly
- f. Weekly
- g. Daily

60. Rate your subordinate's proficiency in performing the task
- a. Very limited
  - b. Limited
  - c. Somewhat proficient
  - d. Competent
  - e. Highly competent

61. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School
- a. Inadequate
  - b. Partially adequate
  - c. Adequate
  - d. Good
  - e. Excellent

.....

**Question Block—32**

Aviation Electrician's Mate Intermediate Level Technician  
Task 15: Troubleshoot Retrograde Wiring Harnesses

- How **frequently** does your subordinate perform this task?
- a. Never
  - b. Annually
  - c. Semi-Annually
  - d. Quarterly
  - e. Monthly
  - f. Weekly
  - g. Daily

62. Rate your subordinate's **proficiency** in performing the task
- a. Very limited
  - b. Limited
  - c. Somewhat proficient
  - d. Competent
  - e. Highly competent

63. Rate the **adequacy and quality** of the training your subordinate received for this task at A-School
- a. Inadequate
  - b. Partially adequate
  - c. Adequate
  - d. Good
  - e. Excellent

.....

**Question Block—34**

64. Please provide any additional comments about your responses to the "critical duties/tasks" questions. Please do not write your subordinate's name in your comments.

**Note: DO NOT include any classified information in your response below.**

.....

**Question Block—36**

**GENERAL QUESTIONS ABOUT YOUR SUBORDINATE'S PERFORMANCE**

65. How interested is your subordinate in the AE rating?

- a. Not interested
- b. Neutral
- c. Interested
- d. Very Interested

How common is it for the supervisor to know how interested their subordinate is in this rating? The supervisor's answer may be biased on other factors of the subordinate's performance.

66. In general, regarding the AE tasks your subordinate performs, he or she:

- a. Could not do them
- b. Would struggle to do them on their own
- c. Could do them with a bit of effort
- d. Could do them easily

Verb tense discrepancy between question and response options. Also 'struggle' could be interpreted multiple ways -- training was poor, required strength or dexterity was lacking, not motivated to perform correctly on their own but if watched, performs acceptably. NETC should define the different response options.

67. In general, my subordinate is disappointed with their performance on AE tasks

- a. Almost never
- b. Sometimes
- c. Often
- d. Almost always

Is it common for the supervisor to know how disappointed their subordinate is with their AE task performance?

.....

**Question Block—feedback**

**YOUR FEEDBACK ABOUT THIS QUESTIONNAIRE**

The number of questions was:

- a. Not enough
- b. About right
- c. Too many

Would someone actually choose this option? May be a way to check for satisficing.

The time it took to complete the questionnaire was:

- a. Too short
- b. About right
- c. Too long

If survey completion time not automatically collected, then add a question before this one regarding how long it took them to complete it.

68. Please fill out some background questions about you and your subordinate to complete the questionnaire in the next section.

Question Block—work status

**BACKGROUND QUESTIONS ABOUT YOUR SUBORDINATE**

Most web-based survey tools allow you to tailor the survey based upon the answers to questions in the survey. If this was the first section, it might be possible to skip the remainder of the questions, making it less onerous on the supervisor and getting a better response rate.

69. About your subordinate: Please select your subordinate's current work status as an AE at your command. (Select all that apply). My subordinate:

- Is currently working in the AE rating at my command
- Has not been assigned to this work center
- Has been assigned to this work center, but is currently performing tasks in other areas (Training PO, Supply PO, etc.)
- Is currently TAD to another work center (e.g., mess cooking, line shack, ship control party, compartment cleaning, corrosion control, etc.)
- Is currently on medical/legal hold pending resolution
- Has been discharged from the service or is awaiting discharge
- Has not had the opportunity to perform the job
- Lacks the necessary knowledge, tasks, and skills to perform the job
- Has been assigned to this work center, but is currently attending additional formal training
- Has not yet been cleared to enter the work center
- Other

Some of the response items are ambiguous as to whether the Sailor EVER worked for this supervisor; eg, the subordinate could have worked for the supervisor long enough to make an impression, but currently be TAD/on a hold/attending training.

Question Block—additional bkd

**BACKGROUND QUESTIONS ABOUT YOUR SUBORDINATE**

If you answered that your subordinate has not been assigned to this work center in the prior question, please leave Question 2 blank.

70. About your subordinate: When did your subordinate report to your command?

Month	<input type="radio"/> Jan	<input type="radio"/> Feb	<input type="radio"/> Mar	<input type="radio"/> Apr	<input type="radio"/> May	<input type="radio"/> Jun	<input type="radio"/> Jul	<input type="radio"/> Aug	<input type="radio"/> Sep	<input type="radio"/> Oct	<input type="radio"/> Nov	<input type="radio"/> Dec
Year	<input type="radio"/> 2011	<input type="radio"/> 2012	<input type="radio"/> 2013	<input type="radio"/> 2014	<input type="radio"/> 2015	<input type="radio"/> 2016	<input type="radio"/> 2017	<input type="radio"/> 2018	<input type="radio"/> 2019			

71. About your subordinate: When did your subordinate report to your work center?

Month	<input type="radio"/> Jan	<input type="radio"/> Feb	<input type="radio"/> Mar	<input type="radio"/> Apr	<input type="radio"/> May	<input type="radio"/> Jun	<input type="radio"/> Jul	<input type="radio"/> Aug	<input type="radio"/> Sep	<input type="radio"/> Oct	<input type="radio"/> Nov	<input type="radio"/> Dec
Year	<input type="radio"/> 2011	<input type="radio"/> 2012	<input type="radio"/> 2013	<input type="radio"/> 2014	<input type="radio"/> 2015	<input type="radio"/> 2016	<input type="radio"/> 2017	<input type="radio"/> 2018	<input type="radio"/> 2019			

**72. About your subordinate:** Where does your subordinate currently perform his/her duties?

- In a shore billet preparing for deployment
- In a shore duty billet with no expectation for deployment
- Stateside at a base, post, or command
- Overseas assignment
- Onboard a ship
- Onboard a submarine
- Assigned to an aviation billet, unit, or squadron
- In a forward deployed unit or group
- None of the above

If none of the above, specify below

.....

**Question Block—37**

**BACKGROUND QUESTIONS ABOUT YOU**

**73. About you:** Leadership: Please select your leadership position

- a. Work Center Supervisor of a recent graduate
- b. Leading Petty Officer (LPO) of a recent graduate
- c. Leading Chief Petty Officer (LCPO) of a recent graduate
- d. Division Officer (DIVO)
- e. Officer in Charge (OIC)
- f. Other

**74. About you:** What is your current paygrade?

- a. E-5
- b. E-6
- c. E-7
- d. E-8
- e. E-9
- f. W-2
- g. W-3
- h. W-4
- i. W-5
- j. O-1
- k. O-2
- l. O-3
- m. O-4
- n. O-5
- o. O-6

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## REFERENCES

- Bethlehem, J., & Biffignandi, S., (2012). *Handbook of Web Surveys*. John Wiley & Sons, Inc, Hoboken, NJ.
- Bradburn, N., Rips, L., & Shevell, S. (1987). Answering autobiographical questions: The impact of memory and inference on surveys. *Science*, 236(4798), 157- 161.
- Buttrey, S., O'Connor, P., O'Dea, A., & Kennedy, Q. (2010). *An evaluation of the construct validity of the Command Safety Assessment Survey*. Technical Report, Naval Postgraduate School, Monterey, CA.
- Fricker, R. (June 24, 2012). Lecture notes from Survey Research Methods (OA4109) course at the Naval Postgraduate School, Monterey, CA.
- Newell, C., Rosenfeld, P., & Harris, R. (2004). Reasons for nonresponse on U.S. Navy Surveys: A close look. *Military Psychology*, 16(4), 265- 276.
- O'Connor, P., Buttrey, S., O'Dea, A., & Kennedy, Q. (2011). Identifying and addressing the limitations of safety climate surveys. *Journal of Safety Research*, 42, 259 -265.
- Schwarz, N. (2007). Cognitive aspects of survey methodology, *Applied Cognitive Psychology*, 21, 277 – 287.
- Sudman, S., & Bradburn, N. (1973). Effects of time and memory factors on response in surveys. *Journal of the American Statistical Association*, 68 (344), 805- 815.

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