

## **Supporting Statement**

### **Field Evaluation of Prototype Kneel-Assist Devices in Low-Seam Mining**

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**Part B**

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## **B. Collections of Information Employing Statistical Methods**

### **1. Respondent Universe and Sampling Methods**

The respondent universe are mine workers at low-seam, continuous mining, coal mines. Typically, each working section of such a mine has approximately nine members. For Phase I testing, one mine will be identified whereby all members of one working section are willing to participate in the study. No respondent selection method will be used. There are no exclusion criteria. For Phase II of the study, six mines will be identified for participation. At least nine individuals at each mine must be willing to participate in the study. All members of that mine interested in participating in the study will be accepted. Again, no respondent selection method will be used and there will be no exclusion criteria. At this time, the mines willing to participate in the study have not been identified. However, several mining companies have agreed to participate in studies with NIOSH that are aimed at reducing the risk of knee injury. Each of these mines has expressed interest in developing better kneel-assist devices. It is suspected that these mines will be willing to cooperate with this study. These mines are: Rox Coal, TJS Mining, and Parkwood Resources. Other mining companies that may be interested in participating in this study are Amfire Mining and Rosebud as they both support low-seam coal operations.

Respondents (participating mine workers) will be awarded a small reimbursement for participating in this study. The initial 6 months of Phase II allows mine workers to use the kneel-assist device of their choice, so drop-out during this time is highly unlikely. Phase I will be used to ensure that prototypes have been developed that are well-liked by the mine workers and have a high chance of success. Thus, it is expected that 65%-70% of respondents will complete the study.

Statistical methods were not used to determine the sample size. Rather, budgetary constraints and practicality were the major driving factors. It is assumed that each cooperating mine will provide approximately one full working section of mine workers (~nine respondents). Due to travel costs, low-seam mines in the Pennsylvania and West Virginia regions will be most desirable. Additionally, not all mine operators are interested in participating in research studies. Given these constraints, NIOSH researchers are hopeful to find a total of seven mines that will participate (1 for Phase I and 6 for Phase II). It would be ideal for these seven mine sites to be associated with seven different mining companies. At this time, only five mining companies have been identified as possible collaborators (Rox Coal, TJS Mining, Parkwood Resources, Amfire Mining, and Rosebud).

### **2. Procedures for the Collection of Information**

Data collection will be performed via interviews by NIOSH researchers. NIOSH researchers have generated four questionnaires to ensure that each question is phrased appropriately by the interviewer. (Attachments 6 to 12) The interviewer will mark the respondent's answer directly on the questionnaire itself. Prior to conducting the interviews, NIOSH researchers

will establish a standard method for asking the questions (e.g. if the respondent is confused, what other information can they provide to them; should inflection be placed on any words or phrases). A consensus on how to ask the questions will be established. This will serve as interviewer training.

Phase I testing will commence first followed by conducting Phase II. The same questionnaires will be used for both portions of the study. No changes will be made to the questionnaires after Phase I.

Respondents will receive advance notice of their interview date. NIOSH researchers will schedule a day, or series of days, with mine management where all participating mine workers at that mine will be interviewed and provided their reimbursement. It will be up to mine management to determine the best way to inform the mine workers of their interview date.

After each visit to a participating mine, all interviewers will meet to discuss any issues, concerns, or any other useful information. Additionally, the principle investigator on the project will review the responses to all questionnaires following each visit. This will serve as quality control. Any items of concern following this review will be discussed amongst all interviewers.

### 3. Methods to Maximize Response Rates and Deal with Nonresponse

Maximizing the response rate is not a major goal for this study because it does not seek a representative sample. Nonetheless, response rates will be maximized by providing all respondents with a form of reimbursement following each interview. This reimbursement will be a \$25 gift card to either Lowes or The Home Depot, depending on which store is located in the surrounding area. Nonresponse is expected to only be a concern if the mine workers do not find the prototypes to be comfortable. The likelihood of this will be drastically reduced through Phase I. Phase II will not begin until the prototypes investigated by Phase I appear to be well-liked.

### 4. Tests of Procedures or Methods to be Undertaken

The questionnaires themselves will be developed and evaluated prior to use in two ways. First, the questionnaires have already been administered to NIOSH personnel that were formerly coal mine workers. In this way, an estimate of burden was established. Additionally, the phrasing and sequence of questions was evaluated and revised based on feedback obtained during this process. For Phase I of testing, the prototype kneel-assist devices will be evaluated for a minimum one month (a longer evaluation period will be necessary if the mine workers suggest/request substantial changes to the prototype). During Phase I, mine workers will use the prototype kneel-assist devices and will provide feedback to NIOSH researchers by responding to the same questionnaires that are intended to be used for Phase II. Additionally, Phase I will include a focus group session involving all mine workers that tested the prototypes. Phase I will continue in this fashion until a prototype is obtained that is well-liked by the mine workers and appears to have a high chance of being fully successful in Phase II of the study.

## 5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

Several individuals assisted in the development of the questionnaires to ensure that basic statistics could be performed based on the data obtained. These individuals will also assist in the final analysis of the data. The individuals are:

Linda McWilliams (NIOSH) 412-386-6116  
Carin Kosmoski (NIOSH) 412-386-6649

The measurement data will be collected by NIOSH researchers that are members of the Musculoskeletal Disorder Prevention Team. The individuals are:

Patrick Dempsey (NIOSH) 412-386-6480  
Jonisha Pollard (NIOSH) 412-386-5220  
William Porter (NIOSH) 412-386-5222  
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