

NIOSH/NPPTL Public Meeting to Discuss the Approval of  
Respiratory Devices Used to Protect Workers in  
Hazardous Environments

SCSR CONCEPTS

April 24, 2003 - 8:00-11:30 a.m.  
Colorado School of Mines - Golden, Colorado

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## P R O C E E D I N G S

1  
2       **TIMOTHY REHAK:** NIOSH in consultation with MSHA is in the  
3 process of developing a proposed rule and performance and  
4 reliability requirements of closed-circuit self-contained  
5 escape breathing apparatus. Our agenda for today followed by  
6 introductions here we're going to have Jeff Kravitz give a  
7 review . . . speaker order . . . speak order still okay yeah,  
8 we're going to have Bob Stein give a review of the SCSR  
9 problems. Jeff Kravitz with MSHA is going to have . . . do to  
10 the long-term field evaluation. And then following the break  
11 we'll have John Kovac who will go in depth on the new concepts  
12 we plan on having for these standards. After that we're ready  
13 to open for comments if anyone wants to make any comments on  
14 what we're proposing to do, any questions you may have. Each  
15 of the presentations are going to last approximately 20  
16 minutes. After the presentations you also have 10 minutes or  
17 so to ask questions there. We'll be very informal about it.

18       Okay my name is Tim Rehak; I work with NPPTL lab. If  
19 anyone is interested in having private one-on-one meetings  
20 with us I'm the contact point. Here's my name, e-mail address  
21 to get a hold of me. We welcome your comments and willing to  
22 sit down with anyone at any time to discuss this. And also in  
23 the packet of information all the PowerPoint presentations are

24 in there. So you don't necessarily need to take notes on  
25 phone numbers, e-mail addresses, etc.

26 Okay some administrative details, the purpose of this  
27 public meeting again we want to present our concept for new  
28 closed-circuit self-contained escape breathing apparatus  
29 standards. Basically, our concepts that we're going to review  
30 in depth later on is to add breathing to the metabolic  
31 simulator testing, have ruddiness and reliability requirements  
32 as part of the standard, safety requirements so we don't  
33 introduce new hazards by this equipment. Also have some  
34 standards on eye protection, some kind of audits along with  
35 non-destructive testing, along with registration for all  
36 SCSR's. And again NIOSH is doing this with the help of MSHA.

37 Okay some logistics here we have sign-in sheets out front  
38 anyone interested in having, pick it up, find it out who the  
39 attendees were that will be available to you after the  
40 meeting. This is a public meeting so everything is being  
41 recorded and will be transcribed and made part of the docket  
42 for this procedure.

43 Okay we're going to follow the agenda very strictly. We  
44 have a lot of time because did not have any outside speakers.  
45 So there will be plenty of time if you have any comments or  
46 any questions then. All we ask is if you have questions, we  
47 have a microphone here since the proceedings are going to be

48 recorded, come up, state who you are, what organization you  
49 represent, and make your comments or questions then. Okay  
50 again I said we're going have this, all the proceedings here  
51 transcribed and made part of the docket. If you want the  
52 transcription, again in the packet of information you can mail  
53 the docket office, you can e-mail them, fax them, phone them;  
54 once again all this in your packet of materials. One thing I  
55 do want to point out is, for this standard; you need to  
56 reference NIOSH 05 that is the docket number for these  
57 proceedings.

58       Finally, a timeline on our work that we're doing here.  
59 2 weeks ago we had the same public meeting in Arlington,  
60 Virginia. We're having this public meeting today. Again, both  
61 of these meetings was to talk about the concepts that we're  
62 proposing to use for the new standards. Any comments you have  
63 to make or if you want one-on-one meetings with us that wanted  
64 to be part of the docket to cover the concepts we need to talk  
65 to you by June 1. And then hopefully by the first of October  
66 we'll have the notice of proposed ruling. If there's no  
67 questions we'll move to Bob Stein to talk -- have a -- review  
68 analysis of SCSR problems. Bob.

69       **BOB STEIN:** We never know what to expect when we come to  
70 these meetings, whether we're going to have a real full room  
71 or not and appreciate everyone's attendance here today. Any

72 time we work on something like this it's always a goal and  
73 objective to get as much opportunity for anybody from the  
74 public to comment on proposed standards that are going to be  
75 developed. And I appreciate your interest in coming and  
76 seeing what is . . . what ideas are on the table. A little  
77 bit of background this is being done out of NIOSH's National  
78 Personal Protective Technology Laboratory which is a newly  
79 established lab in Pittsburgh, Pennsylvania. The respirator  
80 approval activities that go on within NIOSH or have been  
81 incorporated within this new lab and there are many new  
82 capabilities that are planned for the National Personal  
83 Protective Technology Lab in addition to the approval of  
84 respiratory protective equipment. Those approvals are  
85 conducted according to standards in the Code of Federal  
86 Regulations Title 42, Part 84. It's been there since about  
87 1995. Prior to that it was in the Code of Federal Regulations  
88 Title 30, Part 11 in joint custody of MSHA and NIOSH. In  
89 these investigations in particular with SCSR are still  
90 conducted in conjunction with MSHA because most of this  
91 equipment is used in mining. It doesn't have to be limited to  
92 that but the mining regulations of course require a CSR in  
93 coal mines, in underground coal mines so the largest part of  
94 SCSR's population of equipment that's out there is found in  
95 underground coal mines. But we never know what's going to

196 happen, what could happen in the future. One idea that's come  
197 up about using SCSR's for chemical, biological, radiological,  
198 nuclear hazards for escape apparatus and of course they have  
199 some properties that would lend themselves to that because  
200 they are a closed-circuit self-contained system and so levels  
201 of contaminants aren't an issue with these. But it would be  
202 an issue if the materials are correct and so forth. And that  
203 idea is on the table. However these regulations, the concepts  
204 for these regulations had been put into place before that  
205 issue came up. So we do intend to move forward with this  
206 module if there is going to be a separate standard for  
207 chemical, biological types of protections. We envision that  
208 right now as an add-on. In other words, not every approved  
209 SCSR would necessarily be appropriate for that type of  
210 protection. But there are standards that are developed to  
211 make sure that the materials, constructions, so forth are  
212 appropriate. That could be added on so that we may end up  
213 with our SCSR's at two different protection levels. Not the  
214 way it currently is they all have the same protection level  
215 because they are self-containing closed-circuit systems and  
216 that is one protection level.

217 But in developing new standards, we have to something to  
218 rely on. Why would we want to do this? Then we look back  
219 over the history of this type of equipment and while the

120 standards are rather old they've been in place since the early  
121 1900's largely unchanged. In the current form I said since  
122 1995, and only since the early part of the 80's in large use  
123 or in widespread use. During the decade of the 70's, coal  
124 mines were required to have filtered self rescuers for escape  
125 from explosion and fire. Those of course are open-circuit  
126 apparatus and will only protect against CO, a little bit of  
127 smoke maybe, but the protection is primarily against CO. And  
128 while they're small and don't usually suffer that much damage,  
129 they do have their down sides in terms of the protection  
130 that's offered, no good in a low-oxygen environment. So MSHA  
131 instituted a rule in the early 80's this was implemented as  
132 SCSR's were introduced in the mines. And we have now all  
133 those years of experience, over 20 years of experience with  
134 SCSR's in coal mines. Very harsh environment and we've  
135 learned a few lessons over those years and things that we  
136 would like to incorporate if we're going to develop a new  
137 standard. The technical part of the standard right now in  
138 terms of how the apparatus functions is not that much of an  
139 issue. About the only thing that we're looking at there is  
140 the use of metabolic simulators to do some of the testing.  
141 But we all know that if we can come on a situation like this,  
142 one of the things we would like hope for is somewhere inside  
143 you have a very orderly progression of activities that would

144 involve escape from that environment and hopefully if it were  
145 needed, miners would be able to don their self-contained  
146 escape apparatus and be able to proceed in an orderly fashion  
147 out of the mine. And so to that end we would like to be able  
148 to incorporate concepts in the regulation that would help  
149 improve the reliability of the equipment.

150         To this end, we done analysis of problems that we have  
151 kept track of since 1992 and broke it down this way. When we  
152 look at them, we can categorize them in general: three broad  
153 categories. Things that we would determine that were due to  
154 quality control, in other words, we examine some apparatus  
155 we've had to report something. We get it back from the field.  
156 We look at it and it's pretty obvious that whatever's going on  
157 with it is something from the point from the time it was  
158 constructed. You see the other portion . . . other large  
159 portion of the pie there, reliability, there are, of course,  
160 some things that affect these apparatus that are due to their  
161 experience in the field. You take this out in the field, you  
162 beat it around, use it. In the mine it could certainly suffer  
163 some kinds of damage and we've seen many instances of that.  
164 Enough that we would accord, that roughly 40 percent fall into  
165 that category and then, of course, there's always that wedge  
166 that you can't quite bump into either of those two.

167 Training issues, other kinds of one-of-a-kind incidents  
168 that maybe a unit was run over and something catastrophic  
169 happened to it, to the unit itself, is damaged, it was  
170 reported to us. We never had an incidence where anything that  
171 was so far as anything that ever was reported to us were any  
172 of those types of one-of-a-kind incidents that caused any  
173 major problems.

174 Our long-term objectives with this is to identify these  
175 effective strategies that, of course, would result in long-  
176 term improvements in the SCSR performance and obviously in  
177 reliability and we can effect these two ways. Through policy  
178 changes which we've already taken into account and through  
179 rule making which is what we're involved in here.

180 Our underlying philosophy is we want to be able to  
181 approve the simplest designs that will give you the kind of  
182 performance you need. We obviously want some kind of  
183 scientific validity to the methods that we use when they're  
184 apparatus tested that you could make some kind of  
185 statistically significant evaluation of that performance that  
186 it's not a one-time evaluation or something so small that you  
187 can't give some kind of statistical confidence to your test  
188 results. In terms of the equipment, we want it to be easy to  
189 use. This results in greater confidence when people know how  
190 to don the apparatus. They're confident that they can get it

191 activated, get it going, working. This will help in the  
192 overall escape, escape ability, if you will of the people who  
193 are using it because if they have any doubts about how to don  
194 it, whether or not it's working, that causes them to take more  
195 time to execute an escape. All those things, we want this to  
196 be very easy to get started and for the wearer to put on and  
197 use. And ultimately, greater reliability, not only in the  
198 equipment itself but in the overall escape strategies. This  
199 goes back to the second point. If the training that has to be  
200 given in order for the miners or whoever's going to be using  
201 it, takes up so much time that they don't have time to train  
202 about how to get out. That cuts down on the reliability of  
203 the overall escape system and the SCSR should be a very easy  
204 part of that to use.

205       We want to be able to, in terms of anything we do in the  
206 regulation, know that we have discovery of any potential  
207 problems early on and any reaction to that could be very  
208 effective. Any interventions we want them to be pinpointed  
209 only to those segments of the population that may be effected  
210 and this obviously comes into human error factors. Any system  
211 that you build is only as reliable as the people that are  
212 working it. We have a lot of people involved because we have  
213 people at all levels: the manufacturing level, the Government  
214 level, the user level who have to have some kind of oversight

215 about you know what's going on with this equipment and when  
216 users get it into their hands, they need to take care of it.  
217 When we need help sometimes in being able to locate units, so  
218 it all works very well together, but as . . . the more people  
219 you have looking, the more redundancy you have, the better off  
220 you're going to be in terms of being able to find problems if  
221 there are any and come up with effective solutions.

222         This we call shared responsibility because they're in so  
223 many hands and we want to be able to effect this very well in  
224 any new regulation that we come up with and also in terms of  
225 the regulations themselves as you saw that significant portion  
226 of that pie chart dealt with quality assurance issues so  
227 there's also been a new quality assurance module proposed to  
228 increase the or improve the quality assurance methods that are  
229 used in manufacturing of this equipment. And that's broad  
230 scope, that applies to all types of respirators not just  
231 SCSR's.

232         In terms of the SCSR's technical module, we want to make  
233 sure there is adequate ruggedness built into the units. We  
234 want to make sure that upfront that there's some kind of  
235 hazards evaluation conducted. I spoke of one-time incidence  
236 perhaps where a unit could be run over or somehow destroyed in  
237 the mine. It's a very rugged environment. In the early part  
238 of the 80's, after units were approved for use, the Bureau of

239 Mines at that time did evaluations and testing for the hazards  
240 that were involved in these . . . after all they do contain  
241 oxygen and when you take an oxygen source around coal, you  
242 have a potential for something to go wrong. So they crushed  
243 them, burned them, did a whole bunch of things to them around  
244 coal piles and found out yeah they will cause fire if they're  
245 destroyed in a pile of coal but it doesn't get out of hand and  
246 it's not more than something that you can put out with water  
247 or fire extinguisher. And then 20 years of experience, it  
248 hasn't really happened that often. Units run through a feeder  
249 breaker or crusher or run through a miner or anything like  
250 that, it seems to be relatively rare. We don't hear about it  
251 very often.

252 I spoke a little bit earlier about breathing metabolic  
253 simulator testing. Sometimes the audiences that we speak to  
254 are very familiar with that. Probably until the late 70's or  
255 early 80's when you're evaluating a closed-circuit system, but  
256 didn't really have an effective way to do that other than to  
257 put it on the person and let the person wear it. But the  
258 advent of computer technology during that time and the greater  
259 use of it allowed equipment to be built that could simulate  
260 human metabolism in terms of extracting oxygen from that  
261 circuit and being able to inject CO<sub>2</sub> at a controlled rate to  
262 control the breathing frequency and breathing weight form and

263 so forth. And that technology has become very mature over  
264 those 20 years and it's something that we feel will improve  
265 the consistency of testing on SCSR's rather than to use human  
266 test subjects for those evaluations.

267 Training is also an issue with this and anything that  
268 we've built into the module and the way that it effects the  
269 equipment, we will still want to make sure that any inspection  
270 you do of the unit in the field is going to be effective. We  
271 wouldn't want to come up with equipment that was difficult to  
272 inspect or interpret the condition that you find the unit in.  
273 And we want to make sure training also covers the  
274 expectations. What you . . . what are you going to experience  
275 when you don one of these? Many people don't have experience  
276 wearing closed-circuit breathing apparatus. Many miners who  
277 might have to wear them in an evacuation and we want to try to  
278 cover that aspect in the training.

279 Effective inspection, we want the SCSR's to be self  
280 reporting. There are many. I shouldn't say many. There are  
281 several criteria for inspection. When you pick a unit up,  
282 it's very difficult to tell whether or not the unit has  
283 experienced a failure because of something that it should or  
284 should not have been subjected to and one good example of that  
285 is high temperature. High temperature can be degrading to  
286 these systems. They, I think, to a unit, they all have a

287 high-temperature limitation for storage. They're not to be  
288 stored in high-temperature locations because of the  
289 degradation to the materials that that can cause, but when you  
290 pick one up to inspect it, it hasn't been exposed to a  
291 temperature that can say melt the case of do something like  
292 that. You might not have any way to determine whether or not  
293 if it had any experienced that. So one of the things that  
294 we're looking at is having some type of high-temperature  
295 indicator on the unit so that you can tell that it's been  
296 exposed to storage temperatures beyond that which will keep it  
297 in good shape.

298         And if needed, non-destructive testing, things can occur,  
299 happen to the unit that can change the internal configurations  
300 and if that is the case, if you can't tell it visually, it  
301 certainly would be applicable to have non-destructive test of  
302 some sort to be able to know whether that unit has suffered  
303 any internal degradation so those methods could be used.

304         Expanded long-term field evaluation, for those of you who  
305 may not be familiar what was the Bureau of Mines is now part  
306 of NIOSH in conjunction with MSHA has conducted over the years  
307 an experimental sampling of these units from the field. After  
308 all how can we learn what happens to them unless we go out and  
309 collect field-deployed SCSR's, see what kind of conditions  
310 they're in. The rules of this require that they be returned

311 to us in a condition in which you would think that they would  
312 be usable. In other words, they have to pass all the  
313 inspection criteria, they're opened, they're evaluated either  
314 on a simulator or on person and you'll hear more about that  
315 later on and how that's been expanded.

316       Registration, that's not registration for this  
317 conference, that's unit registration. We talk about being  
318 able to effectively monitor or direct any post-deployment  
319 activities. If you find out, for example, that there is an  
320 issue with a certain population of SCSR's, one of the first  
321 questions we get is where are they and how many of them are  
322 there out there. And that information isn't always very good  
323 at the current time and we feel that one effective way to get  
324 at that is to have user registration of the equipment. So  
325 that when it's in the field, the user would simply designate  
326 to one of the agencies that we're not sure of what the  
327 implementation would be like just yet, but they have that in  
328 their possession and use. There's always a question of how  
329 many remain of a certain population. They do experience a  
330 fairly high attrition rate due to the severe environment that  
331 they're used in and again we feel that registration will help  
332 us keep a handle on that. How many of them are still out  
333 there, who has them, where are they? It addresses issues such  
334 as secondary market. One mine might have a population of

335 SCSR's for a very short time and for whatever reason  
336 conditions change. They find they are no longer in need of  
337 those. That was a significant investment for them, so they  
338 sell them to a second company. The original equipment  
339 manufacturer has no way to track that, furthermore, the  
340 Government has no way to track that. Up until now, we still  
341 have it if it's within its service life, it's still valid to  
342 use that unit being that it . . . would it pass all of its  
343 inspection criteria and so forth. But if there is some kind  
344 of an issue with that, we have no good way to track where  
345 those are. We feel that registration will address that.

346       Go into a little bit more detail is to how the problem  
347 analysis comes into this realm of shared responsibility and  
348 you see this table laid out before you. Some of these  
349 activities go on before the unit hits the field and some go on  
350 afterwards and that is broken down by the dark side of the  
351 left and the orange color to the right. All the things that  
352 go on before the unit hits the field are described in the left  
353 hand portion; all the things that go on during its deployment  
354 are in the right hand side of that. And we have activities  
355 that go on during the approval. The new concepts are listed  
356 across the bottom. Ruggedness and hazard testing would go on  
357 there and any new simulator testing would go on there and  
358 that, of course, is where the QC module is most going to

359 affect the units in the time frame in which they're built,  
360 before they're put out into the field.

361         Then after deployment, we have training issues. We have  
362 issues of audits. How do we monitor the population? The new  
363 concept there, of course, being self-reporting aspect of the  
364 units and we figure that would come into play there.

365         And effective reaction is laid out as one of the biggest  
366 items under that, of course, is registration. That same  
367 block, now we have that laid out up here on the upper right-  
368 hand side. There is too much detail to look at on these  
369 problems, but let me just say this in . . . what we want to  
370 show with this slide. These are the summaries or the  
371 instances of the ones that were designated as quality  
372 assurance problems on that previous slide. We wanted to see  
373 if we had this, if we had the same issue occur, how well do  
374 our new concepts address that. In other words, are there  
375 places there where that would be caught? In time where it  
376 would . . . be could it be addressed prior to a user opening a  
377 unit and finding out that it wasn't going to work for them?  
378 And so we've laid out the new concepts to the right and any  
379 place where we feel that the . . . that concept will address  
380 that issue, we placed an "X" in that category and what I want  
381 you to note is if going across the rows, there's no row that  
382 only has a single "X." This is that aspect of redundancy that

383 I talked about earlier. Do we have several layers that would  
384 potentially catch any of these problems that we've seen in the  
385 past? Do we have more than one place that would catch that?  
386 And that if you go across each row, you see some of them have  
387 quite a few of in them, but there is none that has fewer than  
388 two. So we want to make sure that we're redundant at at least  
389 one level.

390 And if you look at the analysis of the ones that were for  
391 reliability, you see the same type of thing. It's . . . the  
392 emphasis has shifted a little bit more because we feel some of  
393 the ruggedness and hazards testing might catch some of that  
394 early on. Long-term field evaluation is still a good thing.

395 The training you see is a big issue for reliability  
396 problems. Many of the instances in the past were we find  
397 units that have been degraded due to the things that they've  
398 been exposed to in the field when that problem is discovered  
399 and we go out and try to retrieve units we find unfortunately  
400 many in that population that are beyond their conditions of  
401 use. In other words, they would not pass inspection criteria.  
402 We feel that's a training issue. People do not know that when  
403 the unit fails inspection that it needs to be removed from  
404 service that removes that as an effective tool for keeping  
405 those units that wouldn't perform out of the population of  
406 ones that are available for escape. So we feel that the

407 training will affect that. People that are actually using  
408 them need to be trained and know what to look for so that when  
409 the unit fails inspection, it can be removed from service.  
410 And of course, long-term field evaluation again analyzing  
411 post-deployment is always an effective tool for getting a  
412 handle on how this goes along. Registration will affect this  
413 because if we find ones that are affected negatively, we'll  
414 know where the rest of the units are like that are out there.  
415 So that you know effective warning, pinpoint warning can be  
416 given to people. Say, hey, remove those units from service  
417 they need to either be inspected or possibly replaced,  
418 whatever goes on with that.

419         And that even applies to the ones that fall into the  
420 other category. Some of the strange things that go on . . .  
421 you know perhaps happened that we don't see that often and we  
422 still feel that there's a good bit of redundancy even in some  
423 of these strange ones. Some of these I noticed there is one  
424 row there that has only a single "X" in it because there's  
425 one-of-a-kind issues that we've not seen affect a large number  
426 of units and they're typically not a problem for the . . . not  
427 a big problem for the end user.

428         Bottom line, where do we end up. People that use the  
429 units want to know themselves if the unit is going to work.  
430 To give them something, if they want to know and you say well

431 I'll give you a statistic. Ninety-nine out of a hundred of  
432 these units work. The question that they always seem to have  
433 in their minds well, do I have the 100<sup>th</sup> unit? And the most  
434 effective ways that we feel that we can get at this is for the  
435 user to be able to inspect it, know in their own mind that it  
436 passes all the inspection criteria and it will be available  
437 for them in such a time that they might need it. And that, of  
438 course, helps to answer that second question. Will it save my  
439 life? If they need to use it, they need to feel that it is  
440 going to work. They need to know it's going to work and being  
441 able to inspect it and assure themselves that it is in good  
442 condition is one of the better ways to get at that, we feel.

443       Accountability, you know sometimes we have questions like  
444 people have some kind of different concept about units that  
445 break. For many years, actually the first 10 years of use  
446 were largely the issue of how long could these be in the field  
447 and still remain viable units had not been addressed right up  
448 front. Service life was brought in as a way to account for  
449 that, but there are still questions about well if it fails  
450 inspection, prior to . . . say its service life is 10 years  
451 and if it fails inspection prior to 10 years, does that mean  
452 that the unit failed? And what we want to make clear to  
453 people is No. We want to be able to project in under the best  
454 of circumstances if you will how long will this unit stand up

455 to field use, but we know that not everyone of them will stand  
456 up to field use for that long a period of time. That's not a  
457 failure. That's simply means it's been used beyond the  
458 expected conditions. It needs to be taken out. It needs to  
459 be replaced. So it's not . . . it shouldn't be seen as a  
460 guarantee in anyway. It's that the users have to know how to  
461 take care of the units and how to properly inspect them so  
462 that if they have been abused, they can be removed from  
463 service and that is essentially what safekeeping means. If  
464 you can try to take steps up front in your deployment plans,  
465 you can get the units placed in such a way that they're not  
466 damaged at too high a rate, that provides for better  
467 safekeeping.

468       So ultimately on our four-way graph there, we want to  
469 make sure that the accountability is properly spread out in  
470 the lateral sense and that we end up with high reliability so  
471 we want to aim high. We want the new standards to be good  
472 quality in that sense. So that concludes that portion of the  
473 presentation and I will certainly open it up for questions,  
474 comments, whatever we have. I guess that's it. I'll turn it  
475 over to Jeff.

476       **TIMOTHY REHAK:** Okay, next I'd like to introduce  
477 Jeff Kravitz. He's with the Mine, Safety, and Health

478 Administration. He'll talk about the long-term field  
479 evaluation. Jeff.

480         **JEFFERY KRAVITZ:** Thanks Tim. It looks like we've lost  
481 half of our audience, but we'll continue and hopefully it will  
482 be interesting for the rest of you. I'm Jeff Kravitz. I'm  
483 the Chief Mine Emergency Operations and Special Projects for  
484 MSHA. I'm also the code approval person for emergency  
485 respirators and SCSR's fall into that category. We have a  
486 family portrait here on the left that is showing the 1-hour  
487 approved SCSR's basically the Ocenco . . . the one on the  
488 right is the Ocenco, Draeger, MSA, and CSE. Basically they  
489 fall into two categories either the stored oxygen with mostly  
490 KO2 apparatus and the others the apparatus stores oxygen and  
491 (inaudible) basically the Ocenco.

492         Bob mentioned the long-term field evaluation is an  
493 important part of what we do to try assure the reliability of  
494 SCSR's. It's a joint MSHA/NIOSH project. The objective is to  
495 track reliability. This was started way back when the first  
496 SCSR's came out and manufacturers sold about 1981. So we got  
497 a pretty good track record being able to use this type of  
498 method to try to find problems with SCSR's that are in the  
499 field. Basically the method is to sample up to a few years  
500 ago sample around 50 and hope to get 100 SCSR's but with  
501 budget constraints we're limited to average about 50 per year.

502 We replaced the SCSR's with brand new SCSR's, take the SCSR's  
503 back to the laboratory, inspect them, and then measure the  
504 life-support capabilities. Some of these were measured on the  
505 breathing metabolic simulator and some of them were done on  
506 human subjects. And then basically what we do is compare the  
507 performance of these SCSR's to new SCSR's and then do the  
508 report which was issued in phased-type of a method known as  
509 the long-term field evaluation data reports.

510 With respect to reliability, the bottom line here is will  
511 the SCSR work? Is there a quality control at the point of  
512 manufacture? How has it being handled? How old is the unit?  
513 Quality control is built in to the approval process. Each  
514 manufacturer has an approved quality control plan that they  
515 submit along with the approval and each year hopefully that  
516 we've instituted over the past 5 years now. We have actually  
517 done audits of every SCSR manufacturer and every PAPR  
518 manufacturer regardless of where they are. So basically even  
519 the ones in Germany, namely Draeger and (inaudible) are  
520 audited on an annual basis. We developed a periodic report by  
521 the manufacturers and over the years we're seeing that the  
522 program has spotlighted a lot of different problems and they  
523 have been very equitably addressed by the manufacturers. But  
524 we still continue to see some problems popping up and that's

525 the small amount that we're trying to get to improve  
526 reliability.

527         When should an SCSR be removed from service? Are the  
528 inspection criteria sound? Are the miners well trained?  
529 Again, the inspection criteria are part of the approval  
530 process. The instruction manuals that accompany SCSR's are  
531 also part of the approval process. The manufacturers specify  
532 to read and the training is something that's recorded by MSHA  
533 for miners. Also each manufacturer has methods for training  
534 that includes part of the approval process also. With . . .  
535 clearly point out reliability will evacuation under oxygen be  
536 successful? This all depends on how well trained the miners  
537 are, how prepared they are, to the ability to evacuate and use  
538 the SCSR. Do they have confidence in the unit? After all the  
539 years we've had the SCSR's in service, we've seen the  
540 confidence in these units eroded and now we're trying to build  
541 that back up by assuring people that there's a big effort to  
542 improve the reliability and to have better methods so that  
543 when they have to use these SCSR's, they're extremely well  
544 trained. They will have confidence that it will get them out  
545 of the mine.

546         Some issues with respect to reliability, critical SCSR  
547 problems were missed because too few SCSR's were collected and  
548 tested. Again, with the points that I mentioned earlier was

549 that you're really looking at 50 SCSR's. It's a very small  
550 sample. You can't really expect to catch all the problems  
551 that are out in the field. Also some manufacturers would self  
552 report their own problems and help out quite a bit and  
553 actually over the years now, we're seeing the amount of  
554 problems in the field reduced that are being reported and the  
555 self reports to the manufacturers are on the increase which  
556 means that they're catching the problems quicker at their own  
557 plants. They're telling us about them and jointly we're  
558 trying to resolve the problem and straighten them out. For  
559 the last couple of years, we've seen that could be the case  
560 and we're glad to see that.

561       Sometimes the long-term field evaluations were hard to  
562 interpret for instance if somebody in a coal mine particularly  
563 out west here would use a unit where you have a long escape up  
564 a severe incline you would not get a full 1 hour of the SCSR  
565 even though in the long-term field evaluation we tested the  
566 unit under the conditions that they're approved under and they  
567 performed perfectly well. Well this interpretation basically  
568 means that when people are trying to escape from a . . . or  
569 are about to escape from a mine under the conditions that go  
570 beyond the approval criteria then they're back in the full  
571 hour that you expect, but it really wasn't brought home with  
572 respect to the miners that this could happen. Same case with

573 larger miners, larger miners might not get the same amount of  
574 time out of an SCSR that a medium-sized miner might get. You  
575 might use more oxygen, might actually work the apparatus a lot  
576 harder. All depends on how the person breathes with it. So  
577 there's a lot of interpretations that have to be made and  
578 sometimes it's an art and sometimes it's a science so that's  
579 where we come in for the interpretations.

580 Different solutions with respect to the sample audits  
581 expanded the program to 200 SCSR's per year and we're hoping  
582 that will improve the sample inspections of SCRS's problems  
583 sooner and hopefully we won't find any out there, but this  
584 will increase the probability that you can find those problems  
585 if they exist.

586 We've also included filter self rescuers. Basically the  
587 only filter up here is the MSAR, SCSR, and that program was  
588 started a couple years ago and we're collecting those and  
589 replacing those also in the field.

590 And then we are learning how to compare the breathing  
591 metabolic simulator to results of Man Test 4. Man Test 4 is  
592 what determines the length of time that the SCSR is given with  
593 respect to approval. So a manufacturer comes in and says this  
594 is a 1-hour or 60-minute SCSR and then when NIOSH tested it,  
595 they'll say "yea" or "nay" based upon Man Test 4. Basically,  
596 Man Test 4 is have a person going through a series of

597 exercises. Some are on a treadmill, some are actually  
598 standing in place, some of them or actually using weights,  
599 carrying something awkward/heavy and that determines the  
600 amount of time that's allotted or actually given to that SCSR.

601 In 2001, you can see with the breakdown. Basically we  
602 try to do these breakdowns on market share. You can see that  
603 the majority of the SCSR's collected were CSE and Ocenco and  
604 it's still the case today to a lesser extent the MSA's, the  
605 M20s, which is the 10-minute SCSR from Draeger.

606 Here's a model of the breathing metabolic simulator on  
607 the left. Basically it replicates the human breathing process  
608 as Bob was mentioning. Actually it started out to measure all  
609 the different (inaudible) oxygen being produced by the SCSR  
610 where you also look at CO<sub>2</sub>, the temperatures, all the  
611 different parameters that we evaluate. On the right,  
612 obviously it's a human subject going through a treadmill  
613 equivalent on Man Test 4. And it might be different work  
614 rates maybe an average work rate, but that's how we've been  
615 testing these SCSR's basically by the rate of breathing on the  
616 breathing metabolic simulator and the average work rate also.

617 We're going now to, as Bob mentioned, try to replicate  
618 Man Test 4 on a simulator and that will (inaudible) approval  
619 relations. With respect to the filters, the setup is

620 basically a bench test similar to what the MSA has in their  
621 lab and results were reported in this also.

622 With respect to reliability, when should an SCSR be  
623 removed from service? Sometimes there's poor decision making  
624 out there. Sometimes there's imperfect information, miners  
625 may not know when you take their SCSR out of the mine. You  
626 look at it. You know, some say you might have a little  
627 cracked case. Well does that mean you take it out of service?  
628 It depends on how you interpret that. Sometimes there's some  
629 inattention given to the SCSR's. In the past there hasn't  
630 been unanimity of judgment and action. Some might say yes,  
631 take it out; some might say no, confuse the miner and doesn't  
632 increase the confidence in the unit. We're trying to improve  
633 that through better training. Some confusion about who is  
634 accountable for safekeeping of the SCSR, as well as what  
635 safekeeping really means. Should the SCSR's be stored in the  
636 proper place, not the bathhouse, where temperatures can get  
637 higher and be stored in trunks of cars (inaudible) MSHA  
638 inspectors they actually be using these back and forth and  
639 sometimes in mines or in the back of pickup truck. I know  
640 that the Wilbert Mine when we were there we were in the mine  
641 next door and the SCSR rode in the back of a pickup truck in a  
642 bed of snow. Obviously they were below 32 degrees and it was  
643 15 degrees below zero outside so no one would get to use the

644 SCSR's until they were warmed up, hopefully. (inaudible)  
645 available with that. You know it says very clearly the  
646 operating structure you don't use if it's below 32. So some  
647 of those points have to be driven home and addressed through  
648 new training.

649         So solutions basically there's new QC standards that are  
650 going to be proposed. New training methods, new training  
651 packages, I'm involved in a project along with NIOSH now to  
652 provide better training videos for each one of the SCSR's.  
653 It's going to be a package. It's going to be available free  
654 of charge for the taking. Pretty well through the first one  
655 now, it should be available late April or early May and it's  
656 going to be a much improved package including the computer-  
657 based training module. You get a CD and a miner will be able  
658 to go through that by himself. There'll be screensavers,  
659 stickers, the whole nine yards. Anything that helps the miner  
660 be more familiar with how SCSR works.

661         Also trying to make the units easier to inspect, there's  
662 manufacturing types of ways this can be done. Pass/fail  
663 indicators for temperature and possibly mechanical shock,  
664 basically you want the miner to take a look at the SCSR and be  
665 able to inspect it and know that there isn't any internal  
666 damage and you know that on the external side, everything  
667 looks okay. So those have to be done through some kind of

668 indicators that actually let the SCSR say hey, take me out of  
669 service essentially.

670           With respect to the decision making matrix, everything's  
671 fine if as approved the SCSR passes inspection, it is in fact  
672 as approved and kept in service that's where it should be.  
673 The problem as indicated in the red block there where it  
674 actually passes inspection it looks perfectly fine on the  
675 external visual examination, but in fact there might be  
676 internal damages hidden inside. It may have been heated up  
677 and not show on the outside, might have been exposed to shock  
678 and vibration and it may have damaged internal workings. So  
679 sometimes those things are kept in service and come to find  
680 out there's a problem when someone tries to open it up and use  
681 it, and that's the ones we're really trying to eliminate that  
682 are being used right now. If it fails inspection as-approved,  
683 it's removed from service, it's out of compliance, it's  
684 removed from service. That's fine; that's where it should be  
685 right there in that red box where (inaudible).

686           Some examples, for example CSE SCSR here's a major crack  
687 on an in-service unit. It wasn't taken out of service until  
688 it was collected. Obviously when you take a look at it, there  
689 was coal dust getting into it. There was moisture getting  
690 into it and had some major problems. Also with the OXY  
691 K-Plus, here's an SCSR had been . . . taken a fairly good hit

692 on the backside. You can see where the strap was . . . the  
693 holding strap was dented. (inaudible) in place. When you  
694 look at it a little closer, when you open it up, there's  
695 actually a crack over here in the pellum\* over here, there and  
696 that leaked oxygen as soon as someone tried to activate it.  
697 So that caused a major problem also even though it might show  
698 limited damage on the outside.

699         Again with the Ocenco EBA 6.5, even though you can look  
700 at the outside of the unit, it looked fine, but on the inside,  
701 there's some internal damage in that case. If you look a  
702 little bit further, you might find a little crack over here  
703 and that little crack actually caused a problem with the  
704 regulators naturally dropped the oxygen. Actually, that  
705 should have been picked up by one of the --

706         -- good source of shock and vibration. How good does  
707 that SCSR, even though it may look good on the outside, it's  
708 something that we can only guess at unless we do some  
709 (inaudible) testing. Criteria for removing SCSR from service  
710 also highlighted in training videos. The training modules  
711 themselves and agreements between NIOSH and MSHA partnerships  
712 including mostly key stakeholders involved in the industry  
713 today regarding computer-based training, CD's as I mentioned,  
714 and those are being made now as we speak. The distribution of  
715 these will be done by MSHA probably EP&D personnel and we're

716 going to distribute quite a few of these at individual mines.  
717 The first module we'll probably make about 1,200 of these and  
718 they'll be mailed out to the individual mines. After the  
719 first batch is sent out, probably get another set of those  
720 things . . . we'll have . . . be some kind of a fee attached  
721 to them. At least for the first batch, it will be free, free  
722 of charge. Actually it's going to emphasize these modules to  
723 increase awareness. So one way to emphasize it is we're going  
724 to do a nation-wide broadcast using the National Guard  
725 teleconferencing facilities and this is a new way we're going  
726 to do it. Basically we're going to have teleconferences for  
727 key sites around the country probably be working in Denver.  
728 And we're going to talk about the new modules. We'll show  
729 some of the video and we'll talk about the computer-based  
730 training. Show a little bit of that and also we're going to  
731 have this up on the MSHA website with links to NIOSH and other  
732 key links. Yes, yes our modules will be an important part of  
733 this new training system we're developing.

734       The temperature sensor for example CSE is doing they  
735 developed a way where they're high-end temperature is running  
736 130 degrees. If that unit is exposed to 130 degrees plus the  
737 indicator will turn to black and once that occurs it should be  
738 sent back to the manufacturer. Hopefully other manufacturers  
739 will do something similar with respect to temperatures. We've

740 seen some big problems in temperatures in the past. We've  
741 seen the units deteriorate because they're exposed to high  
742 temperatures. We've seen breathing bags that were stuck  
743 together because they are exposed to high temperatures and  
744 other problems. The only way we can detect if there's  
745 internal damage through non-destructive testing. We're  
746 starting to see SCSR's . . . we have seen SCSR's in the past  
747 fail inspection but otherwise out of compliance because the  
748 internal workings wouldn't allow the SCSR to perform for  
749 1 hour. Some SCSR's show decreased life support capabilities  
750 and some actually have catastrophic failure. The solutions to  
751 this are practical non-destructive testing, which we've been  
752 pushing for years, CSE and a non-destructive tester where you  
753 shake the unit and you see if the light lights up and tells  
754 you if it makes too much noise. Draeger has picked up on that  
755 and done the same thing and MSA has addressed it a little bit  
756 differently. They looked at their service life plan and tried  
757 to address it that way. Basically, the noise measurements on  
758 SCSR's are being managed by long-term field evaluation program  
759 to develop better correlation between these and hopefully in  
760 the future improve how we inspect these. These types of  
761 SCSR's perform adequately. This is a big collaborative effort  
762 with manufacturers and we're looking at several ways that this  
763 can be done which I'll discuss. One of the issues with

764 respect to multi-shifting of the SCSR's, most manufacturers  
765 agree that something in multi-shifting say three shifts we  
766 have three times the wear on the SCSR. The first days the  
767 SCSR were put in the mines, it was only really predicted that  
768 every miner would have their own SCSR and they really wouldn't  
769 be multi-shifted. So we see SCSR's are triple-shifted and  
770 obviously it's going to have three times the service and three  
771 times the possibility of being exposed to shock and vibration.  
772 And I think MSA has done a good job of addressing that  
773 (inaudible). With respect to non-destructive testing in this  
774 slide here you see what CSE does at their manufacturing plant  
775 it's a noise box. Basically the SCSR is put in there a quiet  
776 chamber it's got a noise measuring device attached to it you  
777 can then determine the noise. One of the technicians here has  
778 the (inaudible) lamp house or outside area where someone  
779 assigned to take care of SCSR's would be able to shake the  
780 SCSR and tell if it's going to fail. If it doesn't pass that  
781 test then it's brought back to the manufacturer and put into  
782 the manufacturer's test to see more precise measurement of  
783 noise the unit is producing. If it makes too much noise,  
784 that's a direct correlation with the amount of loosening of  
785 the chemical bank and then deteriorates performance.  
786 Similarly, Draeger has come up with a . . . what's known as  
787 their EMS and their device looks like this (inaudible) and

788 basically it does a similar thing that the . . . added a  
789 couple more features. This one actually tells when you're  
790 shaking the unit hard enough and basically if you're shaking  
791 it too hard. In the event of (inaudible) unit shaking. That  
792 can be done both either in the field or in the lab.

793 Other ways that we've looked at detecting interior damage  
794 is through neutron radiation, X-rays, other types of exotic  
795 methods. This method here is extremely expensive but it would  
796 show what an SCSR looks like on the inside, whether or not you  
797 took all the internal damage in question. And there's other  
798 methods that we'd like to explore with manufacturer's  
799 (inaudible) as we go along the (inaudible). With respect to  
800 another manufacturer, MSA, we think that one unit it had some  
801 KO2 dust and debris in the circuit. MSA addressed this  
802 problem and they were able to look at their service life plan  
803 with respect to dust. The noise making way of detecting  
804 internal damage in this particular unit wouldn't have worked  
805 easily because the SCSR bags are different than the other two  
806 units. This unit actually makes noise from day one out of the  
807 manufacturing plant, which it's supposed to do. And as the  
808 differential in the noise level really doesn't tell the tale  
809 that there's something wrong with the SCSR. So MSA has  
810 addressed that in a different manner. (inaudible) Questions?

811           **JOHN HIERBAUM, MSA:** Just a couple of minor questions on  
812 the long-term fuel evaluation. You mentioned that you're going  
813 to increase to 200 units --

814           **JEFFERY KRAVITZ:** We've already done that.

815           **JOHN HIERBAUM, MSA:** per year I assume. Did you do that  
816 already?

817           **JEFFERY KRAVITZ:** Yeah, 2 years ago.

818           **JOHN HIERBAUM:** I thought you did that's why I questioned  
819 it.

820           **JEFFERY KRAVITZ:** We were trying to differentiate from  
821 the past (inaudible) so we increased it a couple years ago  
822 (inaudible) but we're not really sure of any problems.

823           **JOHN HIERBAUM:** Do you feel that you've made a big  
824 difference here.

825           **JEFFERY KRAVITZ:** We've quadrupled the number of samples.  
826 We should be helping with the sampling, but still whether or  
827 not that's an adequate sample (inaudible).

828           **JOHN HIERBAUM:** You mentioned that you thought that you  
829 missed problems . . . 50 so I guess now you think because you  
830 went to 200 you think you (inaudible).

831           **JEFFERY KRAVITZ:** We're increasing the probability of  
832 detecting those problems that for example some of the problems  
833 were like in (inaudible) we found some deteriorated breathing  
834 hoses which we wouldn't have seen or we would have seen

835 probably if we picked up units down there included in that 200  
836 sample. So you get a wider sample you get more units returned  
837 back in you have a better chance of catching a problem.  
838 Ultimately we'd like to see 1,000 units but that's  
839 impractical.

840 **JOHN HIERBAUM:** Next question is do you base your sample  
841 size on (inaudible).

842 **JEFFERY KRAVITZ:** Primarily market share.

843 **JOHN HIERBAUM:** Do you consider things like age of the  
844 unit, deployment methods things like that?

845 **JEFFERY KRAVITZ:** Yeah (inaudible) there all those  
846 factors to the best of our ability they're put in a collection  
847 form. So that's reported back in on the collection form and  
848 then (inaudible).

849 **JOHN HIERBAUM:** So age of unit is definitely an issue.

850 **JEFFERY KRAVITZ:** Well age of unit is one of the data  
851 points that we collect but whether or not age itself is  
852 directly related to the performance we don't really see that.  
853 Basically we have seen SCSR's that are 10 years old that  
854 perform perfectly well. So it's not a direct correlation  
855 between age and number of years, what equipment's been exposed  
856 to. And that's why we have to develop these methods to let  
857 the SCSR tell the tale of what it's been exposed to. And you

858 know whether or not it's been exposed to high temperature,  
859 shock, and vibration you know those types of things.

860 **JOHN HIERBAUM:** Okay now let's shift gears to the FSR.  
861 Do you guys (inaudible) field evaluation now?

862 **JEFFERY KRAVITZ:** Yeah, we just started that 2 years ago.

863 **JOHN HIERBAUM:** How many of those do you take, and what  
864 is your criteria?

865 **JEFFERY KRAVITZ:** About 70.

866 **JOHN HIERBAUM:** 70 per year?

867 (inaudible) about 70.

868 **JEFFERY KRAVITZ:** 70 per year.

869 **JOHN HIERBAUM:** 70 per year. Do you take them from all  
870 underground applications or just coal mining?

871 **JEFFERY KRAVITZ:** Mainly just coal yeah.

872 **JOHN HIERBAUM:** Is there any particular reason why you  
873 just do coal?

874 **JEFFERY KRAVITZ:** Basically --

875 **(Unidentified Speaker):** It's called lack of resources to  
876 do the other thing John. If we spend our time collecting  
877 SCSR's in coal mines we're (inaudible) too.

878 **JOHN HIERBAUM:** (inaudible) I'm trying to get a feel  
879 because we're the only approve unit --

880 **JOHN KOVAC:** Here cut to chase we don't see the kinds of  
881 problems with FSR's as we do with SCSR's.

882           **JEFFERY KRAVITZ:** -- (inaudible) address problems,  
883 basically any types of problems that came up I mean actually  
884 were addressed along time ago since it's been in use for such  
885 a long period of time.

886           **JOHN HIERBAUM:** Do you do this all at one time -- 70? Or  
887 do you do this . . .

888           **(Unidentified Speaker):** No, we go to the different  
889 mines.

890           **JOHN HIERBAUM:** You just pick up a few -

891           **JOHN KOVAC:** Yes, yes.

892           **JOHN HIERBAUM:** Okay.

893           **JEFFERY KRAVITZ:** (inaudible) MSHA inspector you know.  
894 Any other?

895           **JERRY MURPHY, BARRICK GOLDSTRIKE MINING:** A couple  
896 questions in retrospect too. We have some concerns as far as  
897 . . . we're in the middle on (inaudible).

898           **JEFFERY KRAVITZ:** Right.

899           **JERRY MURPHY:** And with that we're not required to carry  
900 an SCSR. We have the concerns that the W65 is an antiquated  
901 device for our mining methods -- (inaudible) gases, you know  
902 (inaudible) fires those types of things that exist out there  
903 where our concerns are which the W65 won't address. We can  
904 voluntarily of course choose to go with the SCSR. But the  
905 approval processes that . . . was where we had some concerns.

906 In those should not the approval processes be the maximum  
907 amount of what a person could be exposed to be the minimum  
908 requirement of what's an approved process. For example, it  
909 says like . . . depending on what a person's liter per minute  
910 output is 15 liters per minute you're climbing a ladder in our  
911 mining method everything is up hill both ways. So it's an  
912 extreme situation. Should there be a fire people are going to  
913 be exposed amounts of breathing, respiratory stress, all the  
914 things are going to be associated with that. And should not  
915 the process be on the approval to that minimum requirement as  
916 being the minimum versus maximum being the minimum?

917       **JEFFERY KRAVITZ:** (inaudible) Basically you know the way  
918 SCSR's have been approved is based on Man Test 4 which is just  
919 one standard okay. And it's one series of exercises and  
920 series of things that you have to do in order to get that  
921 approved. Determine what the timeline is based by that  
922 schedule. Now you can't take into account every particular  
923 mining condition. Basically it has to be done on a one-on-one  
924 basis. So if it takes more than one SCSR to get out of the  
925 mine then you have to determine where would you have the cache  
926 of extra SCSR's. And to do that (inaudible). I've been in  
927 mines where it takes three SCSR's to get out of the mine.

928       **JERRY MURPHY:** I see what you're saying.

929           **JEFFERY KRAVITZ:** So you have to make the evaluation,  
930 should you store SCSR's along the way and basically . . . a  
931 lot of mines have voluntarily done that. That's basically the  
932 type of evaluation or analysis we have to make. You can't  
933 have a universal situation where you have a 3-hour SCSR to  
934 cover everybody. And then that triples the weight on those  
935 and basically handicaps the miner's who only need 1-hour  
936 (inaudible). There's other types of strategies that might be  
937 used for instance for example like if you have a 10-minute  
938 SCSR to get a cache for a 60-minute SCSR. Those types of  
939 situations are approved under the division approval processes  
940 for the SCSR storage plans. So in some instances that's being  
941 used. In the future you might see 30-minute SCSR's going to a  
942 2-hour SCSR or something like that. So as the mining  
943 conditions get more stringent right now there's quite a few  
944 mines that fall in that category, not the majority of them.  
945 The majority of them (inaudible) analysis specs several years  
946 ago we found 95 percent of the miner's the coal mines were  
947 assessed by 1-hour SCSR's. So the extra 5 percent began  
948 caching their SCSR's along the way.

949           **JERRY MURPHY:** I see what you're saying.

950           **JOHN KOVAC:** Regulations are designed around apparatus  
951 performance not around deployment. You ~~go~~ can always find  
952 some situation where a miner can not work the device. You

953 know 150 pound or 300 pound miner, nothing is going to be  
954 built that's going to give him that 1 hour of protection. On  
955 the other hand he's not going to be able to work as hard as he  
956 can for that 1 hour. There are limits like that, you could  
957 overwork the devices. You have to apply . . . we have  
958 to . . . remember the regulations require a compliance plan.  
959 You have to demonstrate that deploying those devices in your  
960 mine in particular what (inaudible) miner's that's required.  
961 One hour requirement . . . (inaudible) some situations. So  
962 you have to take that into account and have more units  
963 deployed underground. That's just the way it works.

964 **JEFFERY KRAVITZ:** (inaudible) your situation here  
965 (inaudible) required the FSR.

966 **JERRY MURPHY:** That's right.

967 **JEFFERY KRAVITZ:** But you know -- in -- I've been in  
968 other types of mines, gold mines, that actually instituted  
969 some SCSR's (inaudible) some development work in mind where we  
970 only have one escape way. Sometimes (inaudible) SCSR's in  
971 those. Other types of metal mines also have that kind of  
972 situation. Well so . . . basically, in a voluntary basis  
973 until . . . there's too much to look at -- the government  
974 tried to take care of everybody and (inaudible) people  
975 actually to pick up the banner and do what's right for them.  
976 (inaudible) SCSR basically then that stuff would be how many

977 SCSR's do you need with respect to effect and escape. In  
978 order to do that you go to the first point in the mine you got  
979 this guy you know let him walk out bare faced to find out how  
980 long it would take him and how far he would go. Okay and then  
981 to figure it would be about a 15 percent decrement using an  
982 SCSR. So then that odd 15 percent that's what it's going to  
983 get. That's just a rule of thumb.

984         **JOHN KOVAC:** So the other thing you're missing here  
985 (inaudible). One of the other reasons why you only see  
986 (inaudible). One of the other reasons you only see 60-minute  
987 self rescuers is because we design for wearability.  
988 (inaudible) government requirement so, we could build  
989 (inaudible). Do you remember the old concept of putting  
990 (inaudible)? You guys know that there is a design  
991 (inaudible).

992         **JEFFERY KRAVITZ:** Those are experimental permits in the  
993 future we might see something like that. I think these new  
994 regulations that NIOSH is proposing will allow for innovative  
995 concepts like that to be developed along with increased  
996 reliability and also to let intervention be built into the  
997 units that could detect many types of problems and also to  
998 build in self-testing in the apparatus. So (inaudible) okay  
999 thanks a lot.

1000           **JOHN KOVAC:** One last point, remember these devices  
1001 aren't meant to fight fires they're escape only.

1002           **(Unidentified Speaker):** I'll tell you escape only and  
1003 walking on a flat surface or sitting in an office for 15  
1004 minutes or an hour is much --

1005           **(Unidentified Speaker):** That's not what Man Test 4 is.

1006           **(Unidentified Speaker):** Man Test 4 -- (inaudible) okay  
1007 and at 15 liters per minute which is a standard walking  
1008 distance of darn near any grade that you --

1009           **JEFFERY KRAVITZ:** 15, 15 liters per minute I'm not going  
1010 to debate you on numbers because that's not how we measure  
1011 oxygen uptake okay. The rates of oxygen uptake are in the  
1012 range of about 1.35 liters per minute, 1.5 liters. The  
1013 maximum rates of oxygen uptake that you could sustain over say  
1014 10 minutes are around 3 liters, 3 or 4 liters a minute. 15  
1015 liters a minute is a ventilation rate. These are closed  
1016 circuit devices. Ventilation rate has very little to do with  
1017 how you measure your performance. So and remind yourself that  
1018 Man Test 4 involves climbing vertical ladder, being placed on  
1019 a treadmill things like that. You are not sitting in an  
1020 office, you are not walking on a flat surface that is not in  
1021 the Man Test 4.

1022           **(BREAK)**

1023           **TIMOTHY REHAK:** . . . John works with NIOSH and NPPTL lab  
1024 and he's going to review the new concepts we plan on having.

1025           **JOHN KOVAC:** Okey doke, thank you. What I want to do is  
1026 to sum up what we've learned over the past nearly 2 decades of  
1027 working with these devices and where we're likely to go with  
1028 these standards. Our objective is that no miner should be  
1029 forced to rely upon apparatus for mine escape that might be  
1030 unsafe. Escape always means taking the miner on foot and  
1031 under oxygen to the deepest point of penetration in the mine  
1032 to a point of safety. There are two kinds of SCSR's and they  
1033 differ in the way that they store or deliver oxygen. There  
1034 are chemical oxygen devices that store oxygen, solid chemical,  
1035 potassium super oxide, which functions at the same time as the  
1036 CO2 absorber. And the other kind stores oxygen as a gas under  
1037 high pressure cylinder that is a separate carbon dioxide  
1038 absorber usually lithium hydroxide and the like.

1039           On the left we have photos of the 1 hour devices which  
1040 are approved today. We have the Ocenco, the Draeger OXY  
1041 K-Plus, MSA LifeSaver 60, and the CSE SR-100. Of the four  
1042 only Ocenco is the compressed gas device. We saw this earlier  
1043 the technology as much hard work that has gone into developing  
1044 it and working with it the technology is imperfect in many  
1045 ways there are problems. We saw how we reached our analysis  
1046 of this breakdown of problems. And what we were proposing for

1047 standards which will take care of these issues or at least  
1048 improve upon the situation. One of the things which have  
1049 vexed us for nearly 10 years beginning in the early 90's is  
1050 what service life means, what service life plans accomplish.  
1051 Clearly the existing plans do not ensure . . . do not assure  
1052 that every unit will remain in service for the entire duration  
1053 nor were they ever meant to. In other words if you buy a unit  
1054 that has a projected service life of 10 years that is not a  
1055 guarantee that your unit will reach that service life. The  
1056 other assumption was that in each and every case where the  
1057 units would be overexposed to damaging conditions it would be  
1058 obvious and it would be removed from service. However, that's  
1059 not the case. We have encountered from time to time  
1060 significant numbers of units which look as if they should  
1061 function, but in fact had suffered internal damage which would  
1062 not be evident from visible inspection alone. The culprits in  
1063 this case were shock, vibration, and high temperatures. For  
1064 instance, on the left we have migration of potassium super  
1065 oxide, a toxic chemical, from the chemical bed where it's  
1066 contained by filters and screens into the breathing circuit.  
1067 When this happens that unit can not be used in any sense, a  
1068 miner trying to use it would abandon the unit. The reason  
1069 this happened was that the units were exposed on a random  
1070 basis to shock and vibration and a little bit of damage would

1071 happen each and every time accumulated and the damage in total  
1072 reached the point rendering the unit unusable. On the right  
1073 we have the instance where the units were inspected and  
1074 deteriorated rubber hoses were found. There the culprit was  
1075 exposure to high temperatures. Again a miner trying to use  
1076 the unit in that condition, the unit's unusable.

1077         So our goals and objectives at looking at these standards  
1078 are: provide safe apparatus, we want to focus on behavior of  
1079 the devices, we want the standards themselves to avoid  
1080 ambiguities. We want the standard to be based on  
1081 certification rather than use or deployment. We want to avoid  
1082 the situation where the test subject controls the outcome of  
1083 the approval tests. We talked about shared responsibility  
1084 making the units more reliable. We would also like to make  
1085 the units easier to inspect. We would like to include  
1086 pass/fail indicators on the units for temperature, mechanical  
1087 shock so that when units are overexposed their condition is  
1088 evident by visual inspection. Our philosophy is this, we want  
1089 to able to approve the simplest of designs that meet  
1090 appropriate performance requirements. Simplicity always leads  
1091 to ease of use, greater confidence, and better reliability.  
1092 We've seen this earlier how our initiative of shared  
1093 responsibility is likely to work. And we begin on the left  
1094 with the idea of simple design meaning that the units will be

1095 easy to use, they will be rugged, and appropriate for mine  
1096 deployment. We will test them using breathing metabolic  
1097 simulator. Afterwards as they go into production, reliability  
1098 will be bolstered by the quality control module being in  
1099 place. And later as they're deployed in mines we will have  
1100 better training; we'll have audits which will give us early  
1101 detection of problems we'll even know how to do effective  
1102 reaction if we can track the units with registration. To sum  
1103 up our proposed actions are: breathing metabolic simulator  
1104 testing, ruggedness and reliability regulations as a matter of  
1105 approval, safety requirements, a sidebar issue is eye  
1106 protection. Finally, we will expand the audits that we do.  
1107 We will follow that up with unit registration.

1108       The reasons that we want to use the breathing metabolic  
1109 simulator are providing uniform basis for evaluating the  
1110 functional characteristics of an SCSR at any stage of its  
1111 deployment, whether it's at the point of manufacture or  
1112 afterwards after its seen years of deployment. We want to  
1113 establish performance characteristics that are statistically  
1114 sound so that in doing so we can increase the scientific  
1115 comments and judgments that we make. Because we're using the  
1116 simulator we can continuously monitor performance. We can  
1117 determine performance at depletion of breathable gas supply.  
1118 Human subjects of course will be retained as a part of the

1119 approval criteria. We see a photograph of our simulator. We  
1120 can program to . . . look to be a replica of Man Test 4 for  
1121 the 95<sup>th</sup> percentile miner. That would be a miner who weighs  
1122 about 220 pounds. We also test at fixed work rate for the  
1123 same percentile miner and we programmed to duplicate what a  
1124 human being can accomplish under those conditions. Human  
1125 subject testing, we use calibrated human subjects meaning that  
1126 what we do is program a treadmill in terms of speed and grade  
1127 so that that person is eliciting the same oxygen uptake rate  
1128 as the simulator is programmed to. Because these devices are  
1129 intended to protect miners under the worst conditions, human  
1130 subject testing allows us to monitor how a person is reacting  
1131 to the changes in SCSR performance. We will be able to  
1132 compare human subject testing against BMS testing - sort of a  
1133 check and balance. Work place and reliability requirements we  
1134 will establish a regulation based on records in terms of  
1135 exposure to shock, vibration, and temperature extremes. We  
1136 would like the unit to be able to self-report on its condition  
1137 of readiness, meeting the basics of visual inspection,  
1138 supplemented by non-destructive testing. We would also like  
1139 to see further progress and have temperature indicators, shock  
1140 and vibration indicators, wear indicators on the units so it's  
1141 a matter of simple visual inspection when it should be removed  
1142 from service. And finally we would like to see work towards

1143 tamper resistant packaging so we could avoid those rare  
1144 instances where units are somehow or other deliberately opened  
1145 and then disassembled and put back into service.

1146       Non-destructive testing we looked at earlier. Primarily  
1147 today it's an acoustical technique. What happens is the  
1148 chemical bed makes noise when you shake it. At a certain  
1149 point the chemical bed the particles in it are so ground down  
1150 that the screens and filters within the bed no longer contain  
1151 them. Noise measurements may detect that condition and tell  
1152 you when to remove the unit from service. The neutron  
1153 radiography photographs shows us we can go to extremes and  
1154 make the units transparent and in fact we can detect  
1155 differences in the chemical data makeup by doing that but  
1156 that's very expensive very sort of impractical kind of  
1157 technique but it can be done.

1158       Safety requirements -- the units store oxygen: They  
1159 should not contribute to the likelihood of fire or explosion  
1160 which would force evacuation under apparatus. They are meant  
1161 to save lives not to create the situation where they must be  
1162 worn in order to save lives. Nearly 2 decades both mining  
1163 industries as well as organized labor requested that the  
1164 government after the units have been approved to see if they  
1165 would be the cause of fires or explosions solely by virtue of  
1166 stored oxygen. A number of tests were done in this case

1167 surrounding the unit filled with crushed coal for (inaudible).  
1168 Events happen, they quickly self-terminate the units store  
1169 oxygen but not so much oxygen that there's a problem. We've  
1170 never seen situations like that in a mine. The closest that  
1171 we'll come to is a unit being run over by a track vehicle  
1172 per se. NASA, working with NASA we've also developed analysis  
1173 to look in on five or six explosion hazards. Likely as not  
1174 that will be the vehicle by which we judge whether future  
1175 devices are intrinsically safe for (inaudible).

1176 Mine protection: A 1 hour devices come with goggles.  
1177 Issue is what are the goggles meant to do. We'd like to see  
1178 them be antifogging. We would like to see them to be gas and  
1179 vapor proof as well as support protection against smoke.  
1180 Trying to evacuate through a mine that is smoke filled where  
1181 your vision is impaired even though you're breathing from a  
1182 device which is supporting your life it's a next to impossible  
1183 task. If we're going to require goggles, the goggles have to  
1184 function in order to make sense.

1185 Audits: The devices are man-made they are imperfect in  
1186 many ways. Whether we're talking about the 1-hour devices we  
1187 have today or future devices likely to be developed and  
1188 approved at some later date. Long-term field evaluation has  
1189 so far proved to be an effective means for catching problems

1190 as they arise. This will be continued as part of the standard  
1191 (inaudible) part of the standard.

1192 Finally, registration: The vexing issue is this, we  
1193 detect the problem and we try to work with the manufacturer to  
1194 resolve those issues. Two questions immediately come up. How  
1195 serious is the problem? How widespread is it? If it's  
1196 genuinely life threatening the government needs to react  
1197 promptly and with due diligence. But, where to locate the  
1198 devices, how many devices actually exist today, in whose hands  
1199 are they, how easy will it be to recover them?

1200 Registration needs: Were the device to be approved,  
1201 we'll have to register it with the government as part of the  
1202 approval. Otherwise the device is not approved and so can not  
1203 be deployed. When the device changes hands there are  
1204 secondary markets. Mines go out of business; mines sell their  
1205 stocks to other mines, (inaudible). If come into possession  
1206 of a device however by whatever means you must register it so  
1207 that we know it's in your possession and if corrective action  
1208 needs to be taken we can inform you to make sure that people .  
1209 . . that the situation remains safe. And that's all that I  
1210 have to say. You hear our concepts, do you have any reactions  
1211 or questions?

1212 **JOHN HIERBAUM:** Okay, first of all you mentioned . . . a  
1213 couple of you guys mentioned simplicity of design.

1214           **JOHN KOVAC:** Yes.

1215           **JOHN HIERBAUM:** Give me a definition. What do you think  
1216 of when you think of simplicity? Because this is a very  
1217 complex apparatus and it has to be to function, to work  
1218 properly, and to (inaudible).

1219           **JOHN KOVAC:** Okay the fewer substances something has the  
1220 likelihood of failure goes down. Okay? We're going to talk  
1221 in examples starting mechanisms (inaudible). Is it possible  
1222 to build a device which under new regulations would not  
1223 require a starter? We told you that oxygen levels could drop  
1224 at least for a short while below ambient. The answer seems to  
1225 be yes. And a device of that nature would by virtue of not  
1226 having a starter candle say be simpler. Failures attributable  
1227 to starter candles malfunctioning or not being properly  
1228 manufactured would become non-issues. That's simply an  
1229 example.

1230           **JOHN HIERBAUM:** The SCSR (inaudible).

1231           **JOHN KOVAC:** Other countries employ devices which don't  
1232 have starters. Okay?

1233           **JOHN HIERBAUM:** So okay that's one way of simplicity.  
1234 What else?

1235           **JOHN KOVAC:** Easier or straightforward opening of the  
1236 devices making the steps easier to handle. Making visual  
1237 inspection less ambiguous than it is today. Remember

1238 reasonable people over the years past have disagreed how deep  
1239 a dent was in the outer casing of a device. At whether the  
1240 depth of that dent indicated it should have been removed from  
1241 service. Things like that we have to strip things down now to  
1242 nuts and bolts so that those kinds of debates go away.

1243         **JOHN KOVAC:** That's one of the best better examples of  
1244 maybe how ones that currently exist could maybe be a little  
1245 more simple. But we don't want people to get the idea that we  
1246 intend anything new that would be more complex. Because, and  
1247 as you're probably well aware John, I mean some of the  
1248 technology that's available some of the apparatus perhaps the  
1249 ones that are subjected to repeated use have a lot of  
1250 technology electronics and so forth. And these apparatus are  
1251 not in an environment that would be very conducive to that  
1252 kind of thing. So well it might be nice conceptually to think  
1253 oh we can have warning systems on it and so forth we don't  
1254 think it would be practical. The underlying philosophy what  
1255 we're trying to do doesn't drive to that end. So it's not  
1256 only . . . you know I see what your mind is thinking, how can  
1257 we make them much more simple than they are. Maybe . . .  
1258 maybe they are almost as simple as they can be. We certainly  
1259 don't want to do anything do drive it the other way. And  
1260 that's one of the reasons we stress that.

1261           **JOHN HIERBAUM:** One area that is deployment I'm sure your  
1262 (inaudible) still stuck on miners wearing the device.

1263           **JOHN KOVAC:** That's the easiest way for you to reach your  
1264 device. (inaudible) When you talk simplicity, wearability  
1265 sort of took . . .

1266           (inaudible)

1267           **TIM REHAK:** You're talking really an MSHA issue . . .  
1268           (inaudible)

1269           **JOHN KOVAC:** whether or not you know these things can be  
1270 expanded yet. And again in the future say (inaudible) what if  
1271 we had a 30-minute SCSR and that unit could be smaller,  
1272 lighter, it would probably hold up better because it being  
1273 smaller, lighter it's not going to get as many bangs. You  
1274 said the filter self rescuer it's a workhorse it holds up  
1275 really good. So the smaller the better and the more rugged it  
1276 would be. Possibly many different (inaudible). You could  
1277 have different types of storage plans which would allow empty  
1278 (inaudible) 1 hour SCSR's you can go 2-hour SCSR's things like  
1279 that. So it's a combination it's a system plan really because  
1280 then you have to look at each mine (inaudible) cafeteria plan  
1281 what would you like. And is basically take for example a  
1282 barrack you've got all these different bays in there maybe  
1283 they want a 2-hour SCSR and it's very possible that they may  
1284 want . . .

1285           **JOHN HIERBAUM:** So are you suggesting that the MSHA  
1286 regulation for deployment will change along with the new  
1287 NIOSH . . .

1288           **JOHN KOVAC:** But John we're not talking about MSHA  
1289 regulations at this meeting.

1290           (inaudible)

1291           **JOHN KOVAC:** Well we've not yet proposed changes to the  
1292 regulations previously.

1293           **JOHN HIERBAUM:** (inaudible) if you want a cafeteria plan  
1294 then manufacturers are probably not going to build a 30-minute  
1295 unit or 45-minute unit or a 2-hour unit unless there's a  
1296 market for it. And right now according to that regulation  
1297 there really is no market for it.

1298           **JOHN KOVAC:** Well it's not required. Basically we're  
1299 required one 1-hour SCSR per miner that's basically the  
1300 requirement.

1301           **JOHN HIERBAUM:** Let me put it this way --

1302           **JOHN KOVAC:** The minimum requirement.

1303           **JOHN HIERBAUM:** Yeah, let me put it this way has there  
1304 been any discussion about MSHA considering changing  
1305 requirements and deployment and minimum requirements along  
1306 with the new NIOSH --

1307           **JOHN KOVAC:** We did have a effort going several years ago  
1308 to develop new types SCSR regulations that would then also

1309 include NIOSH issues when and if it comes up again that's to  
1310 be determined. But it as . . . at the moment nothing is being  
1311 considered.

1312         **JOHN HIERBAUM:** So we're pretty much . . .

1313         **JOHN KOVAC:** There's still quite a bit of flexibility  
1314 (inaudible) as long as you have the 1 hour capability per  
1315 miner but you still have the ability to provide a 10-minute  
1316 SCSR in the storage plan and get out of mine and with a cache  
1317 it's stored whatever 10, 5 minutes or whatever it takes to get  
1318 to the cache.

1319         **JOHN HIERBAUM:** Okay.

1320         **JOHN KOVAC:** So it's (inaudible) if someone were on a  
1321 30-minute gear they could do it today.

1322         **JOHN HIERBAUM:** They could?

1323         **JOHN KOVAC:** Yeah they can do that. That storage plan  
1324 would have to be approved by the District Manager in each  
1325 district.

1326         **JOHN HIERBAUM:** Alright tell me then, put it back to you,  
1327 you had a slide up here that said proposed actions.

1328         **JOHN KOVAC:** Yes.

1329         **JOHN HIERBAUM:** One of them was audits. I think you said  
1330 you were going to increase the audits. Does that mean more  
1331 than 200?

1332           **JOHN KOVAC:** No (inaudible) long term field evaluation is  
1333 a part of any standard. It will be okay. Okay? How many  
1334 units per year and how it's done will be a matter for  
1335 determination okay. Right now we do 200. That's within our  
1336 technical capability of doing as well as within our financial  
1337 capability of doing okay. Those are the numbers we will be  
1338 looking at of course.

1339           **JOHN HIERBAUM:** Okay when you say audits do you foresee  
1340 any audits by manufacturers that can be mandatory? Or will it  
1341 only be . . . are we talking here long term field evaluation  
1342 audits or would there be audits required by users,  
1343 manufactures?

1344           **JOHN KOVAC:** Well, John primarily we're talking long term  
1345 field audits that is correct okay. Okay?

1346           **JOHN HIERBAUM:** Registration, the other bullet point is  
1347 out here, you talked a little bit about it at the end about  
1348 management of registration. So a manufacturer would probably  
1349 have to have . . . a some kind of a government certified  
1350 numbering system that would . . .

1351           **JOHN KOVAC:** I thought that given the time and capability  
1352 you have with the internet registering per unit becomes  
1353 simple.

1354           **JOHN HIERBAUM:** Let me finish here. So we would have  
1355 some kind of numbering scheme that would have to probably be

1356 part of the service life plan, part of the requirements of  
1357 getting the approval. And then when we sell that unit to a  
1358 customer it would register . . . it would make . . . it would  
1359 be mandatory by law for them to register that unit if  
1360 they . . . even if they bought it and put it on a shelf?

1361 **JOHN HIERBAUM:** If they deploy it. So they don't have to  
1362 register anything until they deploy it.

1363 **JOHN KOVAC:** That is correct.

1364 **JOHN HIERBAUM:** Okay and then is it only the buyer's  
1365 responsibility to have a second hand market to reregister? Or  
1366 is there a seller's outlet?

1367 **JOHN KOVAC:** When, when, when the inspector's come to  
1368 your mine and say do you have approved SCSR's and you have  
1369 units which are not registered those units are not approved  
1370 okay. How you work it out --

1371 **JOHN HIERBAUM:** There are other markets besides mining.

1372 **JOHN KOVAC:** Indeed.

1373 **JOHN HIERBAUM:** So will this only apply to mining  
1374 applications?

1375 **JOHN KOVAC:** That's a point of discussion that we'll talk  
1376 about later as the details become available. Okay you're  
1377 asking for a definite detail. (inaudible)

1378 **JOHN HIERBAUM:** That's what I'm here for.

1379           **JOHN KOVAC:** Yeah, so I mean we also consider  
1380 responsibility of registration (inaudible) as you should well  
1381 know we're dealing with life saver 60's and candle starters.  
1382 Half the units we have trouble accounting for, where are they.  
1383 With registration that problem would be solved we would all be  
1384 better off. okay? Perhaps, perhaps you have units which have  
1385 not been deployed and used, or destroyed (inaudible)

1386           **JOHN HIERBAUM:** I'm not sure that's the answer, they  
1387 haven't been found yet.

1388           **JOHN KOVAC:** I said there's a possibility they could have  
1389 been. (inaudible) At least had they been registered we would  
1390 know where they were at some point. And then could go to that  
1391 mine and say do you still have these.

1392           **JOHN HIERBAUM:** That brings up another question then. If  
1393 a unit is deployed and is found to be unusable for whatever  
1394 reason, is there any obligation to take serial number and  
1395 somehow -- (END OF TAPE 1, SIDE B)

1396           **JOHN KOVAC:** . . . registration is key to this. Whatever  
1397 problems it raises up, it solves. Over the years, the  
1398 greatest criticism against these devices and problems that  
1399 have been discovered with them has been how many are affected  
1400 and where they are at, registration solves that. If  
1401 registration brings with it other problems, we will deal with  
1402 that. But I see no other way right now how to avoid the issue

1403 of who has those units with this problem and do we do  
1404 industry-wide recalls or do we try to target where the recall  
1405 should be. I think, I think in air-based systems including  
1406 the manufacturers targeted recalls makes sense. So that  
1407 resources of manufacturers have for setting the situation  
1408 right are deployed in the quickest possible time to exactly  
1409 those units that require attention.

1410 **JOHN HIERBAUM:** Okay (inaudible). You mentioned okay in  
1411 your slides about human subject testing?

1412 **JOHN KOVAC:** Yes.

1413 **JOHN HIERBAUM:** -- and new requirements?

1414 **JOHN KOVAC:** There will be human subject testing. Yes.

1415 **JOHN HIERBAUM:** So it will be not just human subject  
1416 testing for wearability but as for breathing . . . metabolic  
1417 testing?

1418 **JOHN KOVAC:** That is correct.

1419 **JOHN HIERBAUM:** And you're going to try to correlate them  
1420 with machinery?

1421 **JOHN KOVAC:** You have a device which is meant to protect  
1422 people. Whatever it does on the machine, if it is well  
1423 behaved, it should also be well behaved on the person.

1424 **JOHN HIERBAUM:** So, so it's got to be a little bit of  
1425 both?

1426 **JOHN KOVAC:** Yes.

1427           **JOHN HIERBAUM:** Is it going to be the same test on both?

1428           **JOHN KOVAC:** It will be the same test. Now you're asking  
1429 for details that we're not prepared to talk about now.

1430           **JOHN HIERBAUM:** Okay, the last question I had was . . .  
1431 Are you familiar with the ISE?

1432           **JEFFERY KRAVITS:** Yes. (inaudible) did his homework.

1433           **JOHN KOVAC:** Well, it wasn't just (inaudible), several of  
1434 us were involved in that.

1435           (inaudible)

1436           **JOHN HIERBAUM:** It wasn't just (inaudible). It was the  
1437 ISE that submitted that.

1438           **JOHN KOVAC:** Indeed.

1439           **JOHN HIERBAUM:** Several people were involved in that.

1440           **JOHN KOVAC:** Indeed, included and after much of that was  
1441 based on was on visits to NIOSH and at that time the Bureau of  
1442 Mines. Yes.

1443           **JOHN HIERBAUM:** Okay, so have you . . . are you going to  
1444 consider that?

1445           **JOHN KOVAC:** We consider all the inputs. That was one of  
1446 them given earlier in talks.

1447           (inaudible)

1448           **(Unidentified Speaker):** Yes, yes, we have it.

1449           **JOHN KOVAC:** We have it. It's a good piece of work. It  
1450 reflects much of our own thinking which should reflect back at

1451 the ISE document. Okay, but at that time, no one was prepared  
1452 to go forward with the regulations involving the testing and  
1453 approval of the SCSRs or emergency breathing apparatus.

1454 You're talking all this is a decade ago in 95 or 96 I  
1455 think, 97, sometime like that, at least a half of a decade  
1456 ago.

1457 **JOHN HIERBAUM:** I remember that. Yes, a few years ago.  
1458 Okay, that's all.

1459 **JOHN KOVAC:** Okay. Anything else? Joe? Yes.

1460 **(Unidentified Speaker):** To those of you who have been  
1461 patiently bearing with us. Our registration folks have asked  
1462 me to remind all three of you to fill out your evaluation  
1463 forms, that yellow sheet that is in the packet. If you do  
1464 that, it helps them I think to . . .

1465 **JOHN HIERBAUM:** Yellow sheet in the back?

1466 **(Unidentified Speaker):** It's . . . wasn't there a yellow  
1467 sheet in the clear pouch?

1468 **JOHN HIERBAUM:** I don't see a yellow one.

1469 **(Unidentified Speaker):** We'll get you one . . . we'll  
1470 get you one.

1471 (inaudible)

1472 **(Unidentified Speaker):** It helps them with some details.  
1473 I know today we got a couple of issues with the location of

1474 the room and so forth. Any comments you have like that we'll  
1475 be appreciated. Sir?

1476 (Unidentified Speaker): One just last quick question.

1477 (Unidentified Speaker): Sure.

1478 (Unidentified Speaker): On the approval processes, it's  
1479 going to be -- you know, the decision is going to be made of  
1480 how that's going to be done. Who is going to be involved in  
1481 that? I mean, is that going to be strictly a NIOSH program or  
1482 is that going to be outside agencies being allowed to make  
1483 comment on those or --

1484 JOHN KOVAC: We will go through this again, we'll get to  
1485 that.

1486 (Unidentified Speaker): Will there be another hearing  
1487 like this one?

1488 JOHN KOVAC: Yes, yes, several hearings yes.

1489 (Unidentified Speaker): Okay, that's all I was curious  
1490 about.

1491 JOHN KOVAC: Right now these are concepts.

1492 (Unidentified Speaker): Right.

1493 JOHN KOVAC: Okay, this is the beginning of rule making  
1494 talks.

1495 (Unidentified Speaker): When you get down to the actual  
1496 rule making, (inaudible) decisions (inaudible).

1497           **JOHN KOVAC:** Yes, okay, at some point shortly, we've  
1498 been, uh, . . . one of the earlier presentations talked about  
1499 September, October in that time frame. There will be details.  
1500 Of course, we want you to comment. The details have gone  
1501 rigid in some sense. Okay. Take issue with us by all means.  
1502 That's what rule making is about. We're here in the West  
1503 because we recognize that there are legitimate and different  
1504 mining interests out here than there are in the eastern coal  
1505 mines in Kentucky. Okay, the only way that we can act with  
1506 due diligence and act with some common sense is to go visit  
1507 you guys. This is just the first of our many visits. If you  
1508 guys have the need to come and see us, we're always there.  
1509 One-on-one meetings are always possible. Okay. We have  
1510 (inaudible) and scientific (inaudible) support.

1511           Okay, it is a joint regulation in some sense involving  
1512 MSHA because they are co-certifiers of those devices used in  
1513 mine emergencies. The single largest number of devices  
1514 employed are in the hands of American miners.

1515           **(Unidentified Speaker):** Absolutely.

1516           **JOHN KOVAC:** Okay? And so our interests reflect theirs,  
1517 we try to guard as best we can so that these devices are in  
1518 ready condition and that they work.

1519           **(Unidentified Speaker):** Also, that's written comments?

1520           **JOHN KOVAC:** Yeah, if you want written comments? Okay,  
1521 send, contact him. In your packet, there's an e-mail address.  
1522 Let her rip. Again, we recognize that mine conditions here  
1523 not just coal, but otherwise . . .

1524           **(Unidentified Speaker):** A little more extreme.

1525           **JOHN KOVAC:** Are different, okay, I'm not going to say  
1526 extreme, different than they are in eastern mines and so we're  
1527 here in recognition of that. We picked the Colorado School of  
1528 Mines because it's well known. We have a good working  
1529 relationship with them. It's a sensible place to have it  
1530 here. Turn out was low, we expected that. The bulk of the  
1531 interest is in deployment in coal mines. But so what, we're  
1532 here, we're glad to see you. Okay.

1533           **TIMOTHY REHAK:** If there are no other questions, again,  
1534 like in my presentation, I list the docket office so if you  
1535 want to submit any comments, submit them to the docket office.  
1536 If you want to get a copy of the transcription of these  
1537 proceedings, contact the docket office. Also, listed in  
1538 there, I have our NIOSH website. Now on there, you'll have  
1539 all the PowerPoint presentations. There will also be the --  
1540 They are basically the same presentations that we gave in  
1541 Arlington. You know, those will be up there along with the  
1542 transcription of that public meeting. If you want one-on-one

1543 meetings with us, you know again, contact me. My name and  
1544 phone number and e-mail address are in there.

1545           **JOHN KOVAC:** If you want copies of the CDs that we're  
1546 working from, presentations, that's doable too.

1547           **TIMOTHY REHAK:** Okay, that's it then. Thank you for  
1548 coming.

(END)