

Acme Coke
11236 S. Torrence Ave.
Chicago IL 60617



acmecoke.com

Document archive

Lidman Training Manual

Dated: March 2000

Recovered from site on Jan 16 2021

**ACME COKE OPERATIONS
LIDMAN TRAINING MANUAL**

s or
ly,

- ✓ **Overview Of Key Responsibilities**
- ✓ **Step - By - Step Descriptions**
- ✓ **Essential Clothing And Equipment**

**Prepared By
The Business Leadership Center
Revised, March, 2000**

PREFACE

The material contained in this training manual is provided for the exclusive use of those parties authorized and granted permission by The Business Leadership Center, Inc. Note, the term "lidman" is used as a descriptive term to reference the duties and responsibilities of this position, and is intended to be "gender neutral" referencing either males or females performing the tasks described herein. Similarly, the masculine terms "he" or "him" are used for ease of writing and reading, but are intended to apply to or reference males and females equally.

ACKNOWLEDGEMENTS

A special note of thanks is extended to Julius Reed (retired shift manager, Acme Coke Operations), Roy Collins (Coke Plant Photographer), and Donnell Lewis (Group Leader) for their assistance in drafting and preparing the text and photographs contained in this training manual. Our thanks are also extended to Doug Podgorny (Area Manager, Ovens) and Pete Medved (Refractory Manager, Ovens) for their technical review of this material. Our appreciation is also extended to Dick O'Hearn (Assistant Division Manager) and Jack Garzella (Coke Plant Division Manager) for their steadfast support of this training manual and program.

TABLE OF CONTENTS

• Objectives	Page: 1
• Position Overview	Page: 2
• Step 1: Inspecting The Charging Steam	Pages: 3-5
• Step 2: Dampering Off	Pages: 6 - 15
• Step 3: Checking and Discing Goosenecks	Pages: 16 - 22
• Step 4: Shutting Off The Steam/Reaming Steam Jets	Pages: 23 - 26
• Step 5: Checking and Cleaning Uptakes	Pages: 27 - 30
• Step 6: Decarbonizing The Oven	Pages: 31 - 33
• Step 7: Preparing To Charge The Oven	Pages: 34 - 41
• Step 8: Charging The Oven	Pages: 42 - 50
• Step 9: General House Cleaning	Pages: 51 - 53
• Safety Clothing and Equipment	Pages: 54 - 55
• Typical Equipment and Tools	Page: 56

OBJECTIVES

The material presented in this lidman's training manual is designed to:

- **Describe Essential Safety and Emission Control Practices**
- **Provide A Step-By-Step Description of Your Job Duties**
- **Identify and Describe Basic Tools and Equipment Used on the Job**
- **Provide You With an Easy to Use and Understand Reference Guide***

***The materials presented in this training manual are designed to be used in conjunction with detailed instruction and on-the-job training experiences conducted under the auspices of ACME Steel's Coke Plant management.**

POSITION OVERVIEW

The lidman plays an essential role in the safe, clean and productive operation of ACME's Coke batteries. Photographs of one of Acme's Coke batteries are shown below (see photos PO-1 and PO-2).

Photo PO-1
Acme's Coke Battery

Photo PO-2
Close-Up Of Oven Doors

In your position as a lidman, you will be responsible for the following major activities:

1. Inspecting the Charging Steam
2. Dampering Off
3. Checking and Discing Goosenecks
4. Checking and Cleaning Uptakes
5. Decarbonizing the Oven
6. Preparing to Charge the Oven
7. Charging the Oven
8. Shutting Off the Steam
9. House Keeping and Other Related Duties

Your group leader and foreman will provide you with your daily, ongoing supervision, instruction and communication. Other ACME Coke plant managers (e.g. - Division Manager, Assistant Division Manager, Area Manager, Safety Manager, Human Resources Manager, etc.) may provide additional directions and instructions as needed.

If you have any questions regarding your job responsibilities, equipment, safety practices, etc., you should contact your foreman and/or group leader.

STEP 1 INSPECTING THE CHARGING STEAM

- A. Before you go up on the battery, you will meet with your supervisor and/or group (crew) leader, as well as other members of your crew. At this time, your supervisor and/or group leader will discuss specific safety, production/operating, company, and/or department issues that may be pertinent to your shift and job duties. This is also an appropriate time for you to ask questions and seek any additional information you may need to perform your job duties safely and efficiently. This is also the time for you to make sure you have on all of your protective equipment (see page 50 on "Safety Clothing") and that all of your clothing and safety equipment are in good condition.
- B. When you come onto the battery, you will begin by checking the steam on each individual oven on the battery to which you are assigned. In this step, you want to make sure there is no steam going into any oven.
- C. You shut the steam off by pulling the steam valve handle to the vertical position (see photo 1C1). On each oven, the steam is off when the steam valve handle is in the "up" or vertical position. In this step, you want to make sure there is no steam going into any oven. The steam is on when the steam valve handle is in the "horizontal" or flat position (see photo 1C2).
- PLEASE NOTE:** Two types of valves are currently in use on the battery. One is a "ball-type" valve and the other is an "okadee" valve. For an okadee valve, the handle position is east or west to indicate on or off respectively.

Photo 1C1

Steam Valve Handle In The Vertical Or "Up/Off" Position

Photo 1C2

Steam Valve Handle In The Horizontal Or "On" Position

ANSWERS: STEP 1

- 1. The lidman should meet with his/her supervisors or group leaders to discuss specific safety, operating/production, and related issues. The lidman should also have on all of his/her personal protective equipment and make sure it's in good condition.**

- 2. The first thing the lidman is responsible for is to make sure the steam is off or not flowing into each oven on the battery to which he/she is assigned on the battery.**

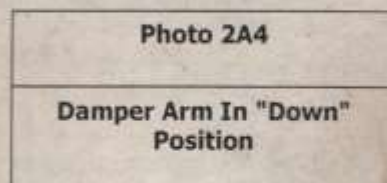
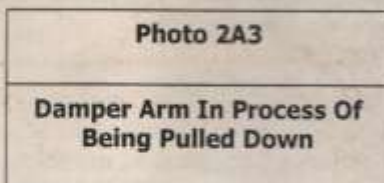
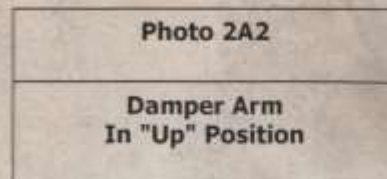
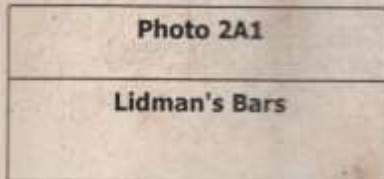
- 3. You pull the steam valve handle up to the vertical or "off" position.**

- 4. The ball valve will point in the "flat" or "horizontal" direction.**

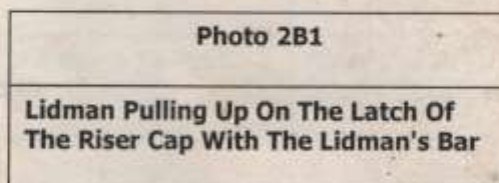
- 5. After removing the side plug, the lidman should put the side steam pipe or blow pipe in the standpipe.**

STEP 2 DAMPERING OFF

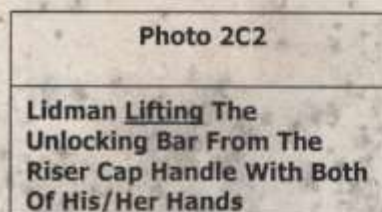
- A. To begin, pick up or grab the lidman's bar (see photo 2A1). Reach up with the lidman's bar and pull the damper arm toward you until it stops (see photos 2A2 through 2A4).



- B. Place the lidman's bar underneath the latch of the riser cap (see photo 2B1). When you pull up on the latch with the lidman's bar, you will crack the seal of the riser cap.

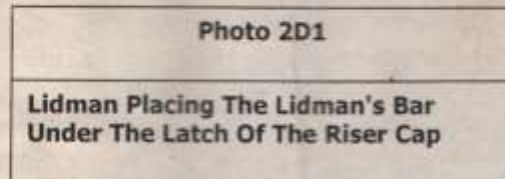


- C. Grab the handle of the latch on the riser cap. Pull or lift the handle up (see photos 2C1 and 2C2).

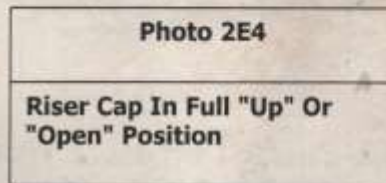
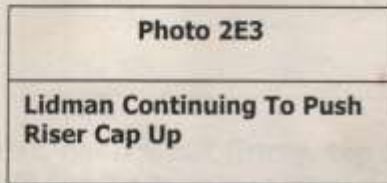
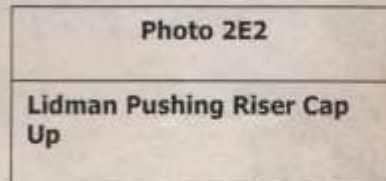
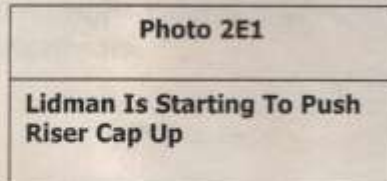


STEP 2 (Continued)

- D. Place the lidman's bar under the latch of the riser cap (see photo 2D1).**



- E. Push the riser cap up as far as it will go to the "open" or "up" position (see photos 2E1 through 2E4).**



STEP 2 (Continued)

- F. Before you begin the inspection of the oven lids and charging hole, insert the side steam pipe or "blow pipe" (see photo 2F1) into the standpipe (see photo 2F2). The nozzle of the side steam pipe should be in the "up" position. The side steam pipe will draw air up through the standpipe. Drawing air up through the stand pipe creates a draft which pulls heat and flame away from the oven charging hole on which you are working. **PLEASE NOTE:** Remember to shut off the side steam, remove side blow pipe, and replace plug which should be sealed tightly after inspections and cleaning are complete. Extended steam usage will overheat oven free space and standpipe leading to excessive carbon formation. Overheating will also cause coke quality to deteriorate.

Photo 2F1

Photo Of Side Steam Pipe Or "Blow Pipe"

Photo 2F2

Side Steam Pipe Or "Blow Pipe" Being Inserted Into The Standpipe

- G. Next, gently, but firmly, tap each lid with the lidman's bar until the lid becomes loose (see photos 2G1 and 2G2). Repeat this activity for each of the four (4) lids, until all four (4) lids are visibly loose. When doing this, you should start on the west - pusher side - and work east to the coke side. **Note:** If you hit the lid too hard (that is, if the oven lid comes off two or more inches), a small explosion will occur and damage the brickwork because air is mixed too rapidly with hydrogen which is trapped under the lid.

Photo 2G1

Oven Lids On Top Of The Coke Battery

Photo 2G2

Lidman Hitting The Oven Lids With The Lidman's Bar

STEP 2 (Continued)

- H. Use the lidman's bar to pull the oven lid away from the oven charging hole (see photo 2H1). You should stand with your back to the wind and pull the lids off. When the wind is at your back, the flame and heat will be blown away from you.**

Photo 2H1

Lidman Using The lidman's Bar To Pull The Oven Lid Away From The Charging Hole

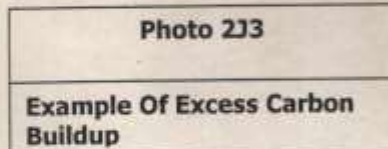
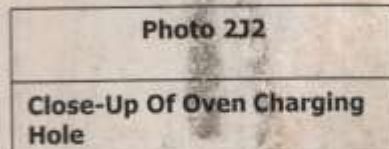
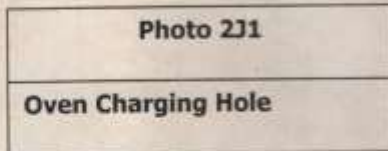
- I. After the oven lid has been pulled from the charging hole, inspect the lid for excess carbon buildup and cracks. If there is excess carbon buildup on the lid, use the chipping bar to remove the excess carbon from the lid. If the lid is cracked (see photo 2I1), contact your supervisor to secure a replacement lid. Note: You should clean only one lid and one charging hole at a time. You will start on the east side for the first oven charging hole and work to the west- one hole at a time - to the fourth oven charging hole.**

Photo 2I1

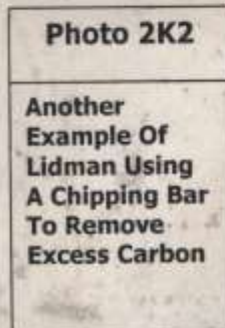
Photo Of Cracked Oven Lid

STEP 2 (Continued)

- J. Look into the oven charging hole (see photos 2J1 and 2J2). Visually inspect for excess carbon buildup (see photos 2J3 and 2J4). Remember, the nozzle of the side steam pipe should be in the "up" position when it is in the standpipe. The side steam pipe will blow up through the standpipe and pull the heat and flame away from you and the oven charging hole you are inspecting and cleaning. Note: Excess carbon buildup restricts the coal flow when charging the oven.



- K. If there is excess carbon buildup, then use a chipping bar to remove the excess carbon (see photos 2K1 and 2K2). Note: If the excess carbon cannot be removed with the chipping bar, then you should use the chipping gun (see photo 2K3). Your supervisor or leadman will instruct you on how to safely and properly use the chipping gun.



STEP 2 (Continued)

- L. **Before you go to the next step of checking the goosenecks, your supervisor will tell you which lid to leave off. Turn the side steam off. Spin the nozzle to the "down" position and then turn the side steam on.**

Note: Do not replace all (4) four lids. In Step 3C (Page 17), you will note that the steam which comes through the side steam pipe will blow the flame up through the oven charging hole which is left uncovered.

QUESTIONS: STEP 2

1. In which direction (toward you or away from you) do you move the damper arm?
2. How (with which tool) do you move the damper arm?
3. In which direction do you push the riser cap?
4. How far up should you push the riser cap?
5. Where do you place or put the side steam pipe or blow pipe?
6. When you are getting ready to inspect the oven lids and charging hole, in which direction (up or down) should the nozzle of the side steam pipe be pointing?
7. Why should the nozzle of the side steam pipe or blow pipe be pointing in the "up" position?
8. Why do you hit the oven lids with the lidman's bar?
9. How do you remove the oven lid?
10. When you pull the oven lids off, should the wind be blowing in your face or at your back?
11. Why should you stand so that the wind is at your back?
12. What should you do if you see that an oven lid has excess carbon buildup?
13. What should you do if you see that an oven lid is cracked?
14. What are you looking for when you look into the oven charging hole?

QUESTIONS: STEP 2 (Continued)

- 15. What does excess carbon buildup do? Why is it important to look for excess carbon buildup?**
- 16. What do you do if you see excess carbon buildup?**
- 17. When do you or why do you use a chipping gun?**
- 18. How many lids should you replace before going to the next step?**
- 19. Who should tell you which lids to replace?**

ANSWERS: STEP 2

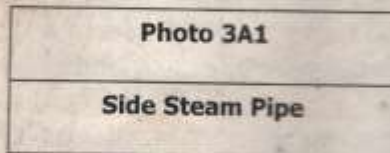
1. The lidman should pull the damper arm toward himself/herself (pull it toward you).
2. The lidman uses his/her lidman's bar to pull the damper arm down.
3. The lidman pushes the riser cap in an upward direction.
4. The lidman should push the riser cap all the way up until it stops or won't go any further.
5. After removing the side plug, the lidman should put the side steam pipe or blow pipe in the standpipe.
6. The nozzle of the side steam pipe should be in the "up" position.
7. The nozzle of the side steam pipe is placed in the "up" position so that the air can be blown up the standpipe. This creates a draft which pulls heat and flame away from the oven charging hole on which the lidman is working.
8. The lidman hits each oven lid in order to visibly loosen the oven lids.
9. The lidman uses the lidman's bar to pull the oven lids from the oven charging holes.
10. The lidman should stand so that the wind is at his/her back.
11. When the lidman has his/her back to the wind, it will keep the flame away from the lidman.
12. If the lidman sees that there is excess carbon buildup on the lid, he/she should use a chipping bar to remove the excess carbon.

ANSWERS: STEP 2 (Continued)

- 13. If the lidman sees that the oven lid is cracked, he/she should contact the supervisor to secure a replacement lid.**
- 14. The lidman is looking for excess buildup which will restrict coal flow during charging.**
- 15. Excess carbon buildup restricts the coal flow when charging the oven.**
- 16. If the lidman sees excess carbon buildup, then the lidman should use a chipping bar to remove the excess carbon.**
- 17. The lidman should use a chipping gun when the excess buildup cannot be removed with a chipping bar. After the lidman has finished using the chipping gun, the lidman should contact his/her supervisor to determine if any additional decarbonization should be performed after the push.**
- 18. The lidman should replace three (3) lids.**
- 19. My supervisor (or the lidman's supervisor) should tell me (the lidman) which lids should be replaced.**

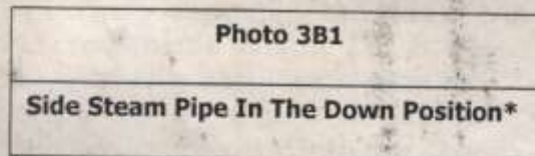
STEP 3 CHECKING AND DISCING GOOSENECKS

- A. Begin by inserting the side steam pipe (see photo 3A1) into the standpipe (see photo 3A2).



Note: After the charging hole and oven lid work is complete, the side steam will be in the "up" position.

- B. Turn the side steam pipe so that the hole in the pipe is in the "down" position (see photo 3B1 showing steam coming out of the hole). **CAUTION:** This photo is for demonstration purposes only. The side steam pipe should never be energized until it has been properly placed into the standpipe.



*Note: Your supervisor will show and explain to you that this photo showing the hole in the side steam pipe is for instructional purposes only. You cannot see the hole in the side steam pipe when the side steam pipe is in the down position.

STEP 3 (Continued)

- C. You must now turn the side steam valve to the "on" position. If you are using an "okadee-type" valve, you will have to push or pull the valve to the "on" position (see photo 3C1). If you are using a "ball-type" valve, you will need to pull the valve down to the horizontal position (see photo 3C2).

Note: The steam which comes through the side steam pipe will blow the flame down the standpipe and up through the oven charging hole which was left uncovered (See Step 2J on page 10).

Photo 3C1	Photo 3C2
Turning Side Steam Valve To The "On" Position Using An Okadee-Type Valve	Turning The Side Steam Valve To The "On" Or Horizontal Position Using A "Ball-Type" Valve

- D. Begin by visually inspecting the side of the gooseneck opening. You should use the 12" disc (see photos 3D1 and 3D2) primarily as an inspection device. To make sure the opening of the gooseneck is sufficient, you will begin by inserting the disc into the gooseneck. Push the 12" disc all the way back into the gooseneck (see photos 3D3-3D7). Turn or rotate the 12" disc as you pull the 12" disc all the way out. Repeat this activity two or three times to remove the excess "fluff" carbon (see photo 3D8 for clean gooseneck).

Note: Do not force or pound the 12" disc into the gooseneck.

Photo 3D1	Photo 3D2
Disc In Horizontal Position	Disc In Vertical Position

STEP 3 (Continued)

Photo 3D3
Lidman Putting 12" Disc Into The Gooseneck

Photo 3D4
Lidman On Stool Pushing The 12" Disc Into The Gooseneck

Photo 3D5
12" Disc Entering The Gooseneck

Photo3D6
12" Disc Inserted Into The Gooseneck

Photo 3D7
12" Disc Inserted All The Way Into The Gooseneck

Note: If you cannot get the disc to go all the way into the gooseneck, this tells you that there is a serious buildup of carbon. You must notify your supervisor immediately of this situation. Your supervisor will instruct you on how to proceed. In some situations, your supervisor may instruct you to use a water blaster (see photo 3D9) to remove the excess carbon. Follow your supervisor's instructions on how to use the water blaster safely and effectively.

Photo 3D8
Photo Of A Clean Gooseneck

Photo 3D9
Water Blaster Which Is Used To Clean Excess Carbon Buildup In The Goosenecks

STEP 3 (Continued)

- E. After you have completed the discing of the gooseneck, then you must look into the gooseneck and check (visually look at) the liquor spray pattern. Look directly into the gooseneck and see if the liquor spray is in a "normal fan pattern" (see photo 3E1).**

Photo 3E1

Liquor Spray In The Normal Fan Pattern

QUESTIONS: STEP 3

1. When checking goosenecks, what do you do with the side steam pipe?
2. Should the hole in the side steam pipe be in the "up" or the "down" position?
3. How do you turn the side steam valve to the "on" position?
4. When should you energize or turn on the steam for the side steam pipe?
5. What will the steam which comes through the side steam pipe do?
6. What's the purpose of or why do you use the 12" disc?
7. Where does the 12" disc go? Where should the 12" disc be placed?
8. How many times should you insert, rotate, and pull out the 12" disc from each gooseneck?
9. Why does a lidman stand on a stool when using or inserting the 12" disc into the gooseneck?
10. If you cannot get the disc to go all the way into the gooseneck, what does this tell you?
11. When do you use a water blaster?
12. Why do you use a water blaster?
13. What type of liquor spray pattern does the lidman look for in the gooseneck? How would you describe this pattern, or what would the pattern look like?

ANSWERS: STEP 3

1. The lidman inserts the side steam pipe into the standpipe.
2. The side steam pipe should be in the "down" position.
3. If the lidman is using an "okadee-type" valve, then he/she must either push or pull the valve to the "on" position. If the lidman is using a "ball-type" valve, then he/she must pull the valve down to the horizontal or "on" position.
4. The lidman should energize or turn on the steam only after the side steam pipe has been properly placed in the standpipe.
5. The steam which comes through the side steam pipe will blow the flame up through the oven charging hole which was left uncovered.
6. The lidman uses the 12" disc primarily as an inspection device to make sure the opening of the gooseneck is sufficiently large. The lidman can also use the 12" disc to remove excess "fluff" carbon from the gooseneck.
7. The lidman pushes the disc all the way into the gooseneck. The lidman should then rotate the disc as he/she pulls it out.
8. The lidman should repeat the procedure (putting disc in, rotating, and pulling it out) two or three times for each gooseneck.
9. The lidman uses the stool so that he/she can safely and more effectively insert, rotate, and pull out the 12" disc from the gooseneck.
10. It tells the lidman there is an unusually serious (large) build up of carbon and the lidman should call his/her supervisor immediately.

ANSWERS: STEP 3 (Continued)

- 11. The lidman uses a water blaster when he/she has been instructed to do so by his/her supervisor.**
- 12. The lidman uses a water blaster when there is hard or excessive buildup that cannot be removed by using the disc.**
- 13. The lidman is looking into the gooseneck to see if the liquor spray is in a "normal pattern." A normal pattern looks somewhat like an inverted, folded fan.**

STEP 4 SHUTTING OFF THE STEAM/REAMING STEAM JETS

- A. Listen to make sure the steam is off. If no sound of steam is present, then proceed to the next step (b) listed below.

Caution: If you hear steam, do not proceed; do not pull or remove the steam plug. If you hear steam, contact your supervisor immediately.

Note: Reaming the steam jets should occur after dampering off and the riser cap is placed in the "up" position. Reaming the steam jets is acceptable anytime prior to charging an oven. Note, also that the steam jets on the assist oven are reamed "live." "Live" refers to the oven chamber which has not been dampered off the collector main. Be careful of the hot gases and hot condensation coming from these steam jets.

- B. Use a steam plug wrench to remove the plug (see photos 4B1 and 4B2).

Photo 4B1
Steam Plug Wrench

Photo 4B2
Lidman Removing A Steam Plug Using A Steam Plug Wrench

- C. Take the steam plug with your hand (see photo 4C1) and set the plug on top of the steam valve.

PHOTO 4C1
Lidman Removing A Steam Plug With His/Her Hand CAUTION: Be Aware Of The Hot Condensation When Removing The Steam Plug With Your Hand

STEP 4 (CONTINUED)

- D. Pick up the reamer (see photo 4D1) and insert the reamer into the steam valve or steam jet(see photos 4D2 and 4D3). [Note: the reamer is at the opposite end of the steam plug wrench.] Push the reamer all the way into the steam valve and turn the reamer clockwise and counter clockwise two (2) or three (3) times to ensure that the steam valve is open. Ovens dedicated to foundry coke production have smaller diameter steam jets. Because of this, make sure you have the proper sized reamer.

Photo 4D1
Note: Reamer Is At The Opposite End Of The Steam Plug Wrench

Photo 4D2
Inserting The Reamer Into The Steam Valve

Photo 4D3
Reamer Inserted Into The Steam Valve

- E. Pull the reamer from the steam valve/steam jet, and hang the reamer on the standpipe (see photo 4E1).

Photo 4E1
Reamer Hung On Standpipe

- F. Pick up the plug from the steam valve and insert it manually (by hand) into the steam jet. Use the steam plug wrench to tighten the plug.

QUESTIONS: STEP 4

1. What do you use the steam plug wrench for?
2. What do you do with the reamer?
3. How many times should you turn the reamer?
4. If you hear steam coming from the steam valve, what should you do?
5. Where is the reamer located?
6. Which steam jets should be reamed?
7. When reaming steam jets, what do you need to be careful of?

ANSWERS: STEP 4

1. The lidman uses the steam plug wrench to unloosen the steam plug.
2. The lidman inserts the reamer into the steam valve or steam jet.
3. Typically the lidman should turn the reamer two or three times.
4. If the lidman is using an "okadee-type" valve, he/she should pull (or push) the steam valve all the way out (or push it all the way in) until the steam is shut off. If the lidman is using a "ball-type" valve, he/she should pull the valve to the full up or vertical position to shut off the steam.
5. The reamer is at the opposite end of the steam pipe wrench.
6. The lidman should ream all steam jets on the ovens to be charged and the required assist ovens he/she has on the operating schedule.
7. Because the steam jets on the assist oven are reamed "live," the lidman needs to be careful not to come in direct contact with the hot gases and hot condensation coming from the steam jets.

STEP 5 CHECKING AND CLEANING UPTAKES

- A. Keep the side steam pipe in the "down" position and continue to blow down as you check and clean the uptake (see photo 5A1).

Photo 5A1
Photo Of Uptake

- B. Walk up stairs to the top of the collector main (see photo 5B1) for the oven on which you are working. Step across the liquor line header (see photo 5B2) on to the platform. Look down into the uptake (see photo 5B3) to determine if there is any excess carbon build up. The opening for the uptake should be at least 80% (approximately twelve inches (12") in diameter).

Photo 5B1
Stairs Going To The Top Of The Collector Main

Photo 5B2
Lidman Stepping Across The Liquor Line Header

Photo 5B3
Lidman Looking Down Into The Uptake

- C. If there is excess carbon in the uptake, use an air lance (see photo 5C1) to remove the carbon.

Photo 5C1
Air Lance

STEP 5 (Continued)

- D. Pick up the air lance (do not put the air on yet) and place the air lance down into the uptake (see photo 5D1). After the air lance is in the uptake, then turn on the air stream. Direct the air stream to the area of excess carbon to remove the buildup (see photo 5D2). Once the excess carbon is removed, then shut off the air (do not remove the air lance from the uptake until you have shut off the air). After the air has been shut off, then remove the air lance and lay it across the top of the liquor line (see photo 5D3).

CAUTION: Please keep in mind that some sections or parts of the air lance (especially the tip which has been in the uptake) may be hot. Do Not Touch these sections.

Photo 5D1

Lidman Placing
An Air Lance
Down Into The
Uptake

Photo 5D2

Lidman Using
An Air Lance
To Remove
Excess Carbon
In The Uptake

Photo 5D3

Air Lance
Placed On Top
Of The Liquor
Line

QUESTIONS: STEP 5

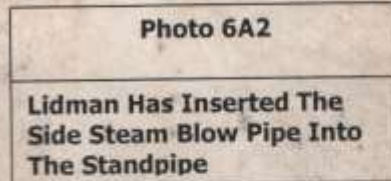
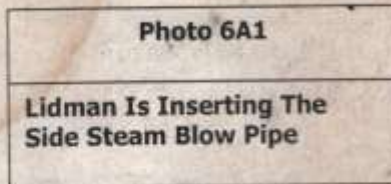
- 1. In which position (up or down) should the side steam pipe be in as you continue to blow into the standpipe?**
- 2. When you look into the uptake, what are you looking for?**
- 3. How do you know or what can you see to tell you there no longer is excess carbon buildup in the uptake?**
- 4. What should you do, if you see carbon ledges or excessiv carbon accumulation?**
- 5. What do you use the air lance for?**
- 6. How many inches in diameter should the opening on the uptake be?**
- 7. When do you turn the air on for the air lance?**
- 8. Why should you avoid touching those sections of the air lance which have been in the uptake?**
- 9. When do you shut off the air to the air lance?**
- 10. Where do you place the air lance after you have turned off the air and are finished with the air lance?**

ANSWERS: STEP 5

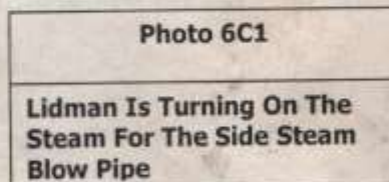
- 1. The lidman should keep the side steam pipe in the "down" position when he/she blows into the standpipe.**
- 2. The lidman is looking for excess carbon build up.**
- 3. The lidman looks to see that the opening on the uptake is a least 80% [approximately twelve inches (12")] in diameter.**
- 4. If the lidman sees carbon ledges or excessive carbon accumulation, the lidman should blow out the carbon or excess carbon accumulation.**
- 5. The lidman uses the air lance to remove the excess carbon from the uptake.**
- 6. The opening should be at least ten inches (10") in diameter.**
- 7. The lidman should turn the air on for the air lance when the air lance is in the uptake.**
- 8. The lidman should avoid touching those parts of the air lance which have been in the uptake because those sections or parts could be extremely hot.**
- 9. The lidman should shut off the air to the air lance after he/she has removed the excess carbon and while the air lance is still in the uptake.**
- 10. After the lidman has turned off the air and is finished with the air lance, the lidman should lay the air lance across the top of the liquor lines.**

STEP 6 DECARBONIZING THE OVEN

- A. If required, after the push, the lidman will reinsert the side steam blow pipe (see photo 6A1) into the side of the standpipe (see photo 6A2). The hole in the side steam blow pipe should be in the up position.



- B. Replace three of the four (4) lids. Your supervisor will tell you which lid to leave off.
- C. Next, you will turn the steam on for the side steam blow pipe (see photo 6C1). You will use the side steam blow pipe to remove excess carbon from the roof of the ovens, and from the charging holes. Your supervisor will give you specific instructions regarding when you should decarbonized an oven and which oven(s) should be decarbonized.



QUESTIONS: STEP 6

1. When do you proceed to decarbonizing an oven?

2. Why do you decarbonize an oven?

3. Where do you insert the side steam blow pipe?

4. When you decarbonize an oven, how many oven lids do you replace?

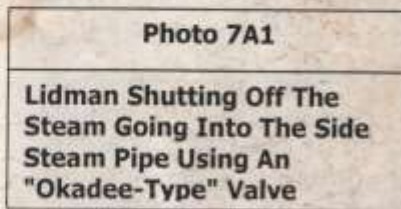
5. How do you know which lid to leave off?

ANSWERS: STEP 6

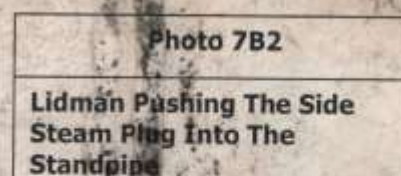
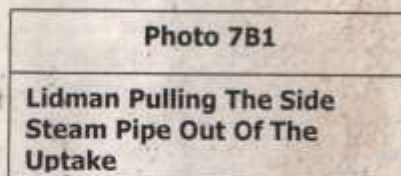
- 1. When instructed by the supervisor, the lidman begins to decarbonize an oven after the oven has been pushed.**
- 2. The lidman decarbonizes an oven to remove excess carbon from the roof of the oven, charging holes, and standpipe.**
- 3. The lidman inserts the side steam blow pipe into the side of the standpipe.**
- 4. When the lidman decarbonizes an oven, he/she replaces three (3) of the four (4) lids.**
- 5. The lidman will be told (instructed) by his/her supervisor regarding which lid to leave off.**

STEP 7 PREPARING TO CHARGE THE OVEN

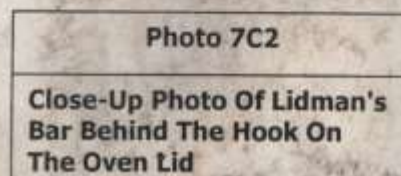
- A. Start by cutting off or shutting off the steam going into the side steam pipe of the oven to be charged. If there is an "okadee-type" valve, this will require you to either push the valve in or pull the valve completely back (see photo 7A1). If there is a "ball-type" valve, this will require you to pull the valve upward until it is in the full "up" or vertical position (see photo 7A2).



- B. Pull the side steam pipe out of the uptake of the oven to be charged (see photo 7B1). The side steam pipe will hang between the two (2) standpipes. Push the side steam pipe plug into the hole located on the side of the standpipe (see photo 7B2.) Use caution because the close clearance to hot objects and exposure to hot condensate could cause burns.



- C. Place the tip of your lidman's bar behind the hook on the oven lid (see photos 7C1 and 7C2). Pull off or remove the lid from the three (3) oven lids you had put back on the oven charging holes during (Step 2J). Make sure that all four (4) lids are off of the oven charging holes of the oven to be charged.



STEP 7 (Continued)

- D.** Next, go over to the standpipe of the adjacent or assist oven (see photo 7D1). Note: The assist oven is always to the south, except for ovens B21, B23, B25, D21, D23, and D25. For these six (6) ovens, you will use the oven to the north as the assist oven. If you are uncertain about the direction (south or north) or which ovens you are working on, contact your supervisor and/or group leader before proceeding. If there is an "okadee-type" valve, then pull or push the steam valve handle to get the steam flowing into the assist oven (see photo 7D2). You will continue this push / pull sequence when you move from one assist oven to the next one. If there is a "ball-type" valve, then pull the valve to the horizontal position to get the steam flowing into the assist oven (see photo 7D3)

Note: Steam is not put into the assist oven until the Larry Car is approaching the oven to be charged. Waiting until the Larry Car is approaching with a load minimizes the time steam is in the oven.

Photo 7D1
Assist Or Adjacent Ovens Are The Ones With The Closed Riser Caps

Photo 7D2
Lidman Pulling An "Okadee-Type" Steam Valve On The Assist Oven

Photo 7D3
Lidman Pulling A "Ball-Type" Valve To The Horizontal Position On The Assist Oven

STEP 7 (Continued)

- E. Go over to the fourth charging hole (see photo 7E1) on the assist oven. Crack the seal on the lid using the lidman's bar. After the seal is cracked on the assist oven charging hole lid, then remove the lid from the charging hole (see photo 7E2). Remember to keep the wind at your back when you are removing the lid.

Photo 7E1

Fourth (4th) Hole Of The Assist Oven

Photo 7E2

Lidman Removing Lid From The Fourth (4th) Charging Hole Of The Oven Being Charged

- F. Before you begin to move or pull the U-tube (see Photo 7F1), make sure the U-tube is in its full "up" position. To raise the U-tube, you must turn the U-tube wheel in a clockwise manner. The U-tube is in its full "up" position when the wheel will not turn clockwise anymore. It is important to have the U-tube in the full "up" position. When the U-tube is in the full "up" position, the seals on the underside of the U-tube will not drag over the top of the ovens and be damaged.

Photo 7F1

U-Tube In Full Up Position

STEP 7 (Continued)

- G. Pull the "U-Tube" (see photo 7G1) into position over the oven to be charged and the assist oven. Note: The "U-Tube" is on an overhead rail. You need to pull the "U-Tube" into position over the charging holes of the two ovens. To lower the "U-Tube" into position, turn the "U-Tube" wheel (see photo 7G2) in a counter clockwise manner. Turn the U-tube wheel in a counter clockwise manner until the U-tube is in its full "down" position. You will know that the U-tube is in the full "down" position, when there is no more weight or tension on the U-tube wheel.

Photo 7G1

Lidman Pulling The U-Tube Into Position Over The Oven To Be Charged And The Assist Oven

Photo 7G2

Photo Of U-Tube In Full "Down" Position

- H. When the larry car (see photo 7H1) is in position and has lowered all three (3) of it's sleeves (see photo 7H2) over the oven to be charged, pull the safety switch down (see photos 7H3 through 7H5) on the larry car. When you pull this switch, it prevents the larry car from traveling. This is called deactivating the larry car.

Photo7H1

Larry Car With Sleeves In "Up" Position

Photo 7H2

Larry Car With All Three (3) Sleeves Lowered

Photo 7H3

Lidman With Hand On The Safety Switch

Photo 7H4

Lidman Pulling Safety Switch To The "Down" Position

Photo 7H5

Safety Switch In Full "Down" Position (Note: This Deactivates The Larry Car.)

QUESTIONS: STEP 7

1. If you have an "okadee-type" valve, how do you cut off or shut off the steam going into the side steam pipe of the oven to be charged?
2. If you have a "ball-type" valve, how do you cut off or shut off the steam going into the side steam pipe of the oven to be charged?
3. What do you do with the side steam pipe plug on the oven to be charged?
4. Where do you place the lidman's bar when you want to remove an oven lid?
5. How many lids should be off of the oven being charged?
6. Why do you push or pull the steam valve on the assist oven? (Note: Two types of Valves)
7. When do you put steam into the assist oven?
8. What should the lidman do with the fourth charging hole lid on the assist oven?
9. How many holes do you cover when you place the U-Tube into position?
10. To raise the U-Tube, in which direction (clockwise or counter clockwise) do you turn the wheel?
11. How do you know when the U-tube is in the full "up" position?
12. How do you know when the U-tube is in the full "down" position?

QUESTIONS: STEP 7 (Continued)

- 13. Why must the U-tube be in a full "up" position before a lidman begins to move the U-tube?**
- 14. When do you pull the safety switch on the larry car?**
- 15. In which direction (up or down) do you move the safety switch on the larry car to deactivate or keep the larry car from moving?**

ANSWERS: STEP 7

1. If the lidman is using an "okadee-type" valve, then he/ she will either push the valve all the way in or pull it all the way out to shut off the steam on the oven to be charged.
2. If the lidman is using a "ball-type" valve, then he/she will pull the valve up to the full "up" or vertical position, or shut off the steam on the oven to be charged.
3. The lidman should push the side steam pipe plug into the hole located on the side of the standpipe of the oven to be charged.
4. The lidman should place the lidman's bar behind the lid on the oven lid.
5. All four (4) lids should be off the oven being charged.
6. The lidman should pull or push the "okadee-type" valve or pull the "ball-type" valve to the horizontal position on the assist oven to start the steam flowing into the assist oven.
7. The lidman puts steam in the assist oven when the fully loaded larry car is approaching the oven to be charged.
8. The lidman should gently crack the seal of the lid on the fourth charging hole of the assist oven. Remove the lid slowly. Remember to keep the wind at your back.
9. When the lidman places the U-tube into position, two (2) charging holes will be covered.
10. To raise the U-Tube, the lidman should turn the wheel in a clockwise manner. (To lower the U-Tube, the lidman should turn the wheel in a counter clockwise direction).

ANSWERS: STEP 7 (Continued)

11. The lidman knows that the U-tube is in the full "up" position, when the U-tube will not turn anymore in a clockwise direction.
12. The lidman knows that the U-tube is in the full "down" position, when there is no more tension or weight on the U-tube wheel.
13. The U-tube should be in the full "up" position before lidman begins to move the U-tube because this will prevent the U-tube from dragging across the top of the oven and damaging the seals which are on the underside of the U-tube.
14. The lidman pulls the safety switch when the larry car is in position and has lowered all three (3) of its sleeves.
15. The lidman should pull the safety switch down to deactivate the larry car.

STEP 8 CHARGING THE OVEN

- A. At this point, the larry car operator and pusherman will now charge the oven. The lidman should be positioned close by to assist, if required. After the oven is leveled and the chuck door is closed by the pushman, the larry car operator will raise the east drop sleeve and the lidman will push the lid onto the east charging hole using his/her broom or lidman's bar (see photo 8A1).
Note: During this preparation to charge step, you must position the lid to be replaced so that it can be slid onto the oven charging hole with a minimum amount of effort and does not interfere with the emission seal on the Larry Car's drop sleeve.

Photo 8A1

Lidman Pushing The Oven Lid With A Lidman's Bar Onto The East Charging Hole

- B. Next, the larry car operator will raise the drop sleeve on the center charging hole, and the lidman will use his/her broom or lidman's bar to push the lid onto the center charging hole (see photo 8B1).

Photo 8B1

Lidman Pushing The Oven Lid Onto The Center Charging Hole

STEP 8 (Continued)

- C. Next, the larry car operator will raise the drop sleeve on the west charging hole, and the lidman will use his/her broom or lidman's bar to push the lid onto the west charging hole (see photo 8C1).

Photo 8C1
Lidman Pushing The Oven Lid Onto The West Charging Hole

- D. After the east, center, and west lids have been pushed into place, the lidman will push up the safety switch on the larry car to activate the larry car (see photo 8D1).

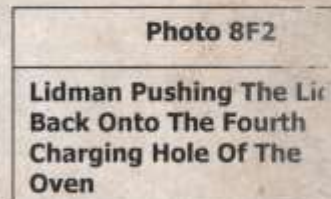
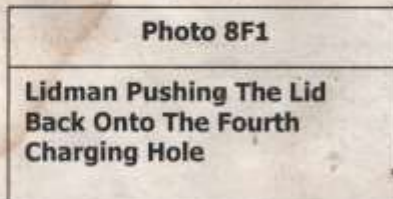
Photo 8D1
Safety Switch In The Full "Up" Position

- E. Then, the lidman will raise the U-Tube to its full "up" position by turning the wheel in a clockwise manner until the wheel will no longer turn (see photo 8E1).

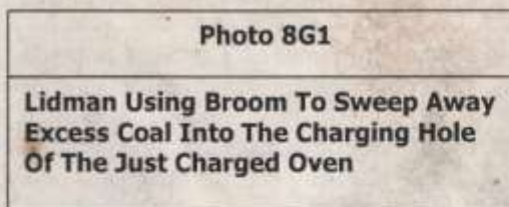
Photo 8E1
Lidman Raising The U-Tube To Its Full "Up" Position (Note: To Get The U-Tube To Its Full "Up" Position, The Lidman Must Turn The Wheel In A Clockwise Manner Until The Wheel Will No Longer Turn.)

STEP 8 (Continued)

- F. The lidman will use his/her broom or the lidman's bar to push the lid back onto the fourth charging hole of the charged oven (see photo 8F1), and the fourth hole of the assist oven (see photo 8F2).



- G. Next, the lidman removes each lid individually from the oven which has been charged. The lidman will use his/her broom to sweep any excess coal into the charging hole of the just charged oven (see photo 8G1). The lidman will repeat opening the lid, sweeping in excess coal, and closing the lid on each of the remaining three (3) oven charging holes.



- H. The lidman uses a refractory slurry (see photo 8H1) to seal each of the four (4) lids on the oven which has been charged and the one lid on the assist oven. The lidman uses the dipper to pull up the slurry from the bucket and to pour the slurry around the oven lid.



STEP 8 (Continued)

- I. The lidman then proceeds to lock down the riser cap by placing his/her foot on the latch and pushing down on the latch (see photo 8I1).**

Photo 8I1

Lidman Locking The Riser Cap By Using His/Her Foot To Push Downward On The Latch

- J. Next, the lidman removes the steam from both the charged oven and assist oven. If the lidman is using an okadee type valve, the lidman must push or pull the okadee charging steam valve (see photo 8J1). If the lidman is using a "ball type" valve, the lidman must make sure the handle of the ball valve is in the vertical or "up" position.**

Photo 8J1

**Lidman Pulling The Charging Steam Valve On The Oven Which Has Been Charged.
(Note: Lidman Must Also Pull Or Push The Charging Steam Valve On The Assist Oven.)**

STEP 8 (Continued)

If you are using an "okadee-type" valve, you will push or pull this valve to shut off the steam (see photo 8J2). If you are using a "ball-type" valve, you will shut off the steam by pulling the valve up to its full vertical or position (see photo 8J3).

PHOTO 8J2
Photo Of An "Okadee-Type" Steam Valve

PHOTO 8J3
Photo Of A "Ball-Type" Valve

Note: If you are using "okadee-type" valves, you w^{even} alternate the pushing and pulling of the steam valve. If you start by pushing the first one, then you will pull the next one.

- K. The lidman then looks at the top of the collector main house (see photo 8K1) to make sure the red light has turned to green (see photo 8K2).
PLEASE NOTE: These lights are only an aid. These lights do not replace your responsibility to physically or visually inspect each steam valve on each oven.

Photo 8K1
Photograph Of Collector Main House With Red Light

Photo 8K2
Photograph Of Collector Main House With Green Light

- L. After all of the steam is removed, the lidman must inspect the oven which has been charged and its assist oven. Any points or places which are generating emissions must be sealed immediately! If your attempt to seal with either kwool (for side plug only) or slurry (for lids and standpipe seals) fails to stop the emissions, or the riser cap is leaking, contact your shift manager immediately.

STEP 8 (Continued)

M. At the end of each series, the lidman must re-inspect all lids and standpipes. Any visible emissions must be stopped or eliminated before the lidman prepares for the next series. The word "series" refers to the specific cells which are to be charged and the times they are to be charged. Ovens are always charged sequentially in a designated period of time. Three examples are shown below.

EXAMPLE 1		EXAMPLE 2		EXAMPLE 3	
<u>Time</u>	<u>Ovens</u>	<u>Time</u>	<u>Ovens</u>	<u>Time</u>	<u>Ovens</u>
7:03	A13	8:01	C11	8:59	B2
7:15	A15	8:12	C13	9:11	B4
7:26	A17	8:24	C15	9:23	B21
7:38	A19	8:35	C17	9:35	B23
7:45	A21	8:47	C19	9:47	B25

Note: Ovens are typically (but not always) scheduled in blocks of five (5) ovens per battery.

QUESTIONS: STEP 8

1. When the larry car operator raises the east, center, or west drop sleeve, what is the lidman suppose to do?
2. To raise the U-Tube, what does the lidman need to do? ^{he}
3. What does the lidman need to do about the excess coal which remains after the charging of an oven?
4. What is the refractory slurry for? Why do we use a refractory slurry?
5. How does the lidman get the refractory slurry on the lid?
6. How does the lidman lock down the riser cap?
7. How does the lidman remove the steam from the charged or assist ovens?
8. How does the lidman shut off the steam?
9. When does the lidman look at the collector main house?
10. What does the lidman look for when he/she looks at the collector main house?
11. What does the word or term "series" mean?
12. How many ovens are typically scheduled in a series?
13. What does the lidman use Kwool for and where is it applied?
14. What does the lidman use slurry for and where is it applied?

ANSWERS: STEP 8

1. The lidman uses his/her broom or the lidman's bar to push the lid onto the east, center or west charging hole.
2. The lidman turns the wheel in a clockwise manner until the wheel will no longer move and the U-tube is in its "up" position.
3. The lidman must use his/her broom to sweep all excess coal into the charging hole.
4. The lidman uses the refractory slurry to seal the after the oven has been charged.
5. The lidman uses the dipper to pour the refractory slurr around the oven lid.
6. The lidman uses his/her foot to push the riser cap latch all the way down.
7. The lidman removes the steam by pulling (or pushing) an "okadee-type" valve or moving a "ball-type" valve to the full vertical or "up" position on both the charged oven and the assist oven.
8. If the lidman is using an "okadee-type" of valve, then the lidman must either push or pull the valve to shut off the steam. If the lidman is using a "ball-type" valve, then he/she must pull the valve to the full vertical (or "up position") to shut off the steam.
9. After the lidman has removed the steam from both the charged and assist ovens.
10. The lidman looks for either a green or amber light at the top of the collector main house.

ANSWERS: STEP 8 (Continued)

11. The word or term "series" refers to the specific sequential time in which specific ovens on the battery are to be charged.
12. Ovens to be charged on a battery are typically (but not always) scheduled in blocks of five (5).
13. The lidman uses kwool to seal the side plugs (stop or prevent emissions).
14. The lidman uses slurry to seal (stop or prevent emissions) on the lids and standpipe.

STEP 9 GENERAL HOUSE KEEPING

- A. The lidman must keep the tops of the ovens clean of breeze, and other debris by sweeping up all excess material (see photo 9A1). In addition to work assigned by your supervisor, the lidman must sweep the arc board to toe board" by each oven and its assist oven your daily schedule. It is also the lidman's responsibility to keep the environmental booth clean at all times. **REMEMBER:** There is to be no smoking on the battery - this includes the environmental booth.

Photo 9A1

Lidman Keeping Top Of Oven Clean
By Sweeping Up All Excess Material

- B. Please note that eating, smoking, chewing of gum or tobacco, putting on makeup, etc. are not permitted while working in a restricted area on the ovens.
- C. The lidman shall report all abnormal conditions such as excessive battery smoking, broken lids, broken larry car rail, slurry spillage, etc., to his or her supervisor.

QUESTIONS: STEP 9

1. What must the lidman do with any excess coal or other debris that is on the ovens?

2. If a lidman sees or becomes aware of any unusual or abnormal conditions such as excessive smoke, broken lids, slurry spillage, etc., what should the lidman do?

3. When working in a restricted area of the Coke Oven, can a lidman smoke, chew gum or tobacco, eat, put on makeup, etc.?

ANSWERS: STEP 9

1. Preferably, the lidman should use his/her broom to sweep the excess coal and other debris into the charging hole of a freshly charged oven. The lidman should not sweep excess coal and debris into an oven that will be pushed soon. If coal and debris are swept into an oven that will be pushed soon, this creates excess emissions during the push.

2. When a lidman sees or becomes aware of any unusual or abnormal conditions, the lidman should report those conditions to his/her immediate supervisor.

3. No. These types of activities cannot be engaged in.

SAFETY CLOTHING AND EQUIPMENT

S
OU

1. Flame retardant jacket and pants
2. Safety (steel toe) shoes and metatarsal protection
3. Flame retardant gloves
4. Glove liners (optional)
5. Hard hat
6. Hard hat helmet liner
7. Face shield for hard hat
8. Monogoggles (optional) - typically preferred on "windy" days
9. Respirator (Disposable) - for "trainees"
10. Respirator (using two filters) - for "regular employees"
11. Snood
12. Safety glasses with side shields
13. Wristlets

Note: The company supplies items 1- 13 above (see photos 10A1 - 10A3). You will need to supply your own cotton or natural fiber (no synthetic materials are permitted) long underwear and thick socks.

When your equipment is in good repair and properly used, it will help protect you from serious injury. Therefore, please take care for your safety equipment as if you had to pay for it. As noted on page 3, Step 1A, before you go up on the battery, you should make sure you have all of your personal protective equipment, and that all of your clothing and safety equipment are in good condition.

(steel toe) shoes

TYPICAL EQUIPMENT AND TOOLS

This list shown below references most of the tools equipment the lidman typically uses. Other pieces of equipment or additional tools may be used on a limited selected basis.

- Air hose
- Broom
- Chipping Bar
- Chipping Gun
- Lidman's Bar
- Reamer
- Slurry Bucket and Dipper
- Steam Plug Wrench
- Twelve Inch (12") Disc
- Valve - "Ball" Type
- Valve- "Okadee" Type
- Water Blaster