

930315CCN1169

SUMMARY:

This investigation was initiated due to a consumer complaint that her home's furnace malfunctioned on 2/22/93, leaking carbon monoxide gas into the home and poisoning her and her three children. All four victims were found to have very high carbon monoxide levels in their blood, and each required medical attention.

A local heating contractor examined the 10 year old furnace, finding that the bottom stainless steel coil of the Up-flow model gas forced-air furnace had several leaking connections.

PRE-INCIDENT:

The consumer resides in a two-story woodframed farmhouse, believed to have been built in approximately 1900. The home has a subterranean basement, and the home's furnace is installed there. The home is approximately 1800 sq. ft. in size.

In 1983, the consumer had a new Lennox "pulse" model G14Q3-80-2 direct vent forced air gas furnace installed in their home. This furnace has serial no. 5883M14871 (8-73860), and was manufactured at "no. 58" by Lennox Industries, Incorporated, P.O. Box 809000, Dallas, TX 75380, (214) 980-6000. The furnace is controlled by a Lennox brand thermostat located in the living room which is on the ground level of the home; this thermostat is model no. 8232, and displayed serial no. T87F20483. The furnace has a 80,000 BTU rating, and it is certified by the American Gas Association. A copy of the furnace Rating-Identification Plate is contained in attached exhibit "A".

The furnace was installed as new by Harvey Mosher of Mosher Heating, located on Highway 9 in Riceville, IA 50466.

The furnace was serviced at least every other year by this same heating contractor, and was believed to have been operating properly throughout its life. This contractor does not have any carbon monoxide testing equipment, and no pressure testing of the furnace was ever done. The consumer changed the air filters himself several times each heating season.

The furnace is installed on top of a four inch thick cement slab, which is built on top of the basement cement floor. The furnace is mounted 36 inches from the nearest wall, and heat ducting runs to all areas of the residence.

The furnace is vented horizontally through an exterior basement wall to the outdoors; this flue venting consists of 3 inch diameter PVC pipe rising 18 inches from the furnace exit point to the basement ceiling height, which is 7 ft. x 6 in. The PVC piping then runs horizontally for a distance of 10 ft. 6 inches, where it exits the home. This furnace also utilizes an outdoor air intake system, again using 3 inch diameter PVC piping which runs parallel to the flue vent piping.

The heating contractor noted no operational problems during his periodic service visits, and the furnace was believed by the consumer to be operating properly. The furnace has a "spark igniter" ignition system, rather than a standing pilote flame; an automatic gas valve safety device provides 100% gas shutoff if the direct spark does not ignite the gas in the combustion chamber. There is also a pressure switch safety valve in place, which shuts down the furnace if leakage occurs in the air in-take or exhaust lines. The furnace never shut down automatically.

There is not a safety interlock on the filter housing access panel; this panel was always kept properly in place. There is a safety interlock on the panel covering the blower motor area. There are two safety valves in the gas fuel supply system.

In November, 1992 the consumer's family members began experiencing reoccurring headaches while in the home. The consumer had the furnace checked by Mosher Heating on 11/6/92, and the furnace was determined to be operating properly. Again, this contractor does not have carbon monoxide leak detection equipment, but he found nothing to indicate a problem. The contractor also checked the home's gas range at that time, and believed it also to be working properly. The family members subsequently to have less headache system, and the furnace issue was forgotten.

INCIDENT:

On 2/22/93, at approximately 8:30 a.m., the consumer and her three children, ages 13, 12, and 3, all recognized that they were again suffering from severe headaches, nausea, and lethargy. They immediately went to a nearby medical clinic, the Mercury Family Care Center, located at 915 Pine ST., Osage, IA 50461. The doctor there suspected the family was suffering from carbon monoxide poisoning, and a blood test preformed on the mother (respondent) determined that she had a carbon monoxide level of 21%. This level was felt to be quite abnormal and dangerous. The family immediately moved out of the home and moved in with relatives; their symptoms disappeared quickly, and they suffered no known long term injury.

POST INCIDENT:

Harvey Mosher Heating came to the home on 2/23/93, as did the natural gas supplier, Osage Municipal Utilities. A second heating contractor, Foth Plumbing and Heating Co., 532 Main St, Osage, IA, also responded to the home on that date. Using carbon monoxide gas detection equipment, these personnel found that there was carbon monoxide level of 300 parts per million in the basement of the home on level of 240 parts per million in the kitchen area. It was preliminarily determined that the carbon monoxide was leaking from poorly brazed connections in the stainless steel bottom coil of the Lennox furnace. The furnace's heater combustion chamber/heating coil components were replaced approximately one week later by Mosher Heating, and the family then moved back into their home. They have suffered no other health problems since the incident.

The complainant wrote to Lennox Industries in early March, 1993, reporting their defective furnace problems and asking Lennox to reimburse the family for expenses incurred. These unreimbursed expenses included a furnace new parts installation fee of \$178.25; \$39.38 for the Osage Municipal Utilities service visit on 2/23/93; and \$55.23 for the second heating contractors service call that same date. It appears that the approximate \$750.00 in medical bills incurred as in result of this incident will be paid by the family's health insurance carrier.

On 3/18/93, the complainant received a written reply from Mr. Roger Weuve, an employee at the Lennox Corporate Offices, (214) 497-5000; Mr. Weuve indicated Lennox wished to have someone come to the complainant's home and check on the furnace installation; the complainant is agreeable to this, and is awaiting further word from Lennox as to when this will take place.

PRODUCT IDENTIFICATION:**Furnace:**

Lennox "Pulse" model no. G14Q3-80-2 direct vent forced air gas furnace. Furnace displays serial no. 5883M14871 (8-73860), and was manufactured at "no. 58" by Lennox Industries Incorporated, P.O. Box 809000, Dallas, TX 75380, (214) 980-6000.

930315CCN1169

-4-

APPLICABLE STANDARDS:

This furnace's identification plate indicates that the unit is in conformance with standards set forth by the American Gas Associations.

ATTACHMENTS:

- Exhibit "A": Photographs of the furnace involved in this incident.
- "B": "Authorization for Release of Name" signed by the complainant on 4/6/93.
- "C": Copy of the Original Investigation request.

AUTHORIZATION FOR RELEASE OF NAME

Thank you for assisting us in collecting information on a potential product safety problem. The Consumer Product Safety Commission depends on concerned people to share product safety information with us. We maintain a record of this information, and use it to assist us in identifying and resolving product safety problems.

We routinely forward this information to manufacturers and private labelers to inform them of the involvement of their product in an accident situation. We also give the information to others requesting information about specific products. Manufacturers need the individual's name so that they can obtain additional information on the product or accident situation.

Would you please indicate on the bottom of this page whether you will allow us to disclose your name. If you request that your name remain confidential, we will of course, honor that request. After you have indicated your preference, please sign your name and date the document on the lines provided.

You are hereby authorized to disclose my name and address with the information collected on this case.

My identity is to remain confidential.

Clare Quinn
(Signature)

4-6-93
(Date)

levels and it was determined that the carbon monoxide was being emitted from our Jennox furnace. The reading was over 300.

Our serviceman informed us that the bottom coil on the furnace had two areas where the stainless steel tube had been poorly brazed. One was a rather small hole and the other was a rather sizeable hole where the brazing was missing. We don't know how long the brazing had been missing but it appears as though it could have been missing for quite some time. A third hole appeared above the coil on another portion of the heating mechanism. Three different holes indicates to me that our furnace was constructed with extremely poor workmanship - especially when lives depend on it.

We don't know if this was the ~~first~~ only Jennox furnace with this problem or if there are many others. If there are many other poorly constructed furnaces then there are also many other potential victims waiting to die.

We are aware that there are federal guidelines for industries to adhere to when a safety problem arises and I hope that this has^{not} happened before or will happen again.

Sincerely,
Clare Irwin

P.S. Lennox Industries address is:

Lennox Industries
P.O. Box 809000
Dallas, TX 75380
Ph: (214) 980-6000

Attachment

031.0

JUN 9 1993

IDI #930315CCN1169

6-01-93

The attached documentation should be attached to the above IDI as an addendum. The information was received from the complainant on 6-01-93.

Dennis R. Blasius
MKE-RP

LENNOX Industries Inc.

CORPORATE OFFICES

HEATING AND AIR CONDITIONING
ESTABLISHED 1895

P.O. BOX 799900
DALLAS, TEXAS 75379-9900
PHONE: 214-497-5000
FAX: 214-497-5299

May 17, 1993

Mrs. Clare Irvin
RR 1 Box 81
Riceville IA 50466

Dear Mrs. Irvin:

In reply to your letter of May 3, 1993, I would like to inform you of what has occurred concerning your Pulse furnace.

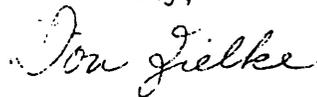
During the inspection of your furnace by the Lennox dealer, Mosher Heating, and Messrs Roger Weuve and Dean Kenagy of Lennox Industries, the furnace was found to be overfired. The dealer, assisted by Mr. Weuve, made the necessary adjustments to reduce the firing rate to an acceptable input with a resulting CO (carbon monoxide) level of 10-15 parts per million.

The heat exchanger removed from your home was tested at our R&D laboratory and found to have some small holes. Condensing furnaces fired on fuels that contain sulphur or chlorine will corrode over a period of time. Any sulphur or chlorine in the combustion air will also cause heat exchanger corrosion. The higher the sulphur or chlorine content, the greater the rate of corrosion. We have found that furnaces fired on propane usually are more susceptible than those fired on natural gas.

As a result of this occurrence and our findings, Lennox will modify the recommended service and check out procedures for regular preventative maintenance on pulse combustion furnaces.

We wish to thank you for bringing this matter to our attention and if we can be of future service, please let us know.

Yours truly,



Don Zielke
Director, Technical Support

DZ/pw

R. R. 1 Box 81
Pineville, La 70466
May 26, 1993

U.S. Gov. Consumer Prod. Safety Com.
310 W. Wisconsin Ave.
Box 244
Milwaukee, WI 53203

Dear Mr. Blasius:

Enclosed are copies of correspondence we have had with Tennox Industries.

Thank you for your help and concern, and we are relieved that this will be addressed on a national level.

Sincerely,
Clare Levin

Enc/2

LENNOX Industries Inc.

CORPORATE OFFICES

HEATING AND AIR CONDITIONING
ESTABLISHED 1895

P.O. BOX 799900
DALLAS, TEXAS 75379-9900
PHONE: 214-497-5000
FAX: 214-497-5299

March 18, 1993

Mrs. Clare Irvin
RR 1 Box 81
Riceville IA 50466

Dear Mrs. Irvin:

Your March 8, 1993, letter to the President of Lennox Industries has been referred to my attention for follow up. Thank you for writing as the circumstances outlined in your letter are very serious and deserve considerable attention to eliminate the possibility of a recurrence. This is the first I have heard of this type of failure.

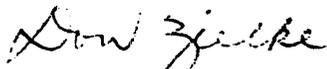
In your letter you mention that the furnace was tested and it was determined that it was the source of the carbon monoxide. During development of the Pulse furnace we tested for the possibility of this type of condition and were not able to produce the result you describe. However, that does not mean that it did not happen as you have outlined.

We have found in some occurrences of carbon monoxide that there was a fireplace, a wood burning stove, a gas fired water heater or a gas fired clothes dryer or combination of these units in use at the time. There was lack of combustion air in the residence and the resulting low pressure with the furnace fan running caused one of the appliances to downdraft and distribute products of combustion throughout the residence.

We would ask that you allow our field service consultant, Mr. Roger Weuve, to inspect your installation to be sure that this possibility does not currently exist in your residence. We would further ask that you allow us to have the old furnace shipped to our laboratory so that we can determine the cause of this failure and test the furnace combustion characteristics.

I would ask that you advise me of the above at your earliest convenience so that we can react quickly to this issue. Once again I apologize for the incident that prompted you to write and wish to assure that we will make every effort to determine the cause and solution to this problem.

Yours truly,



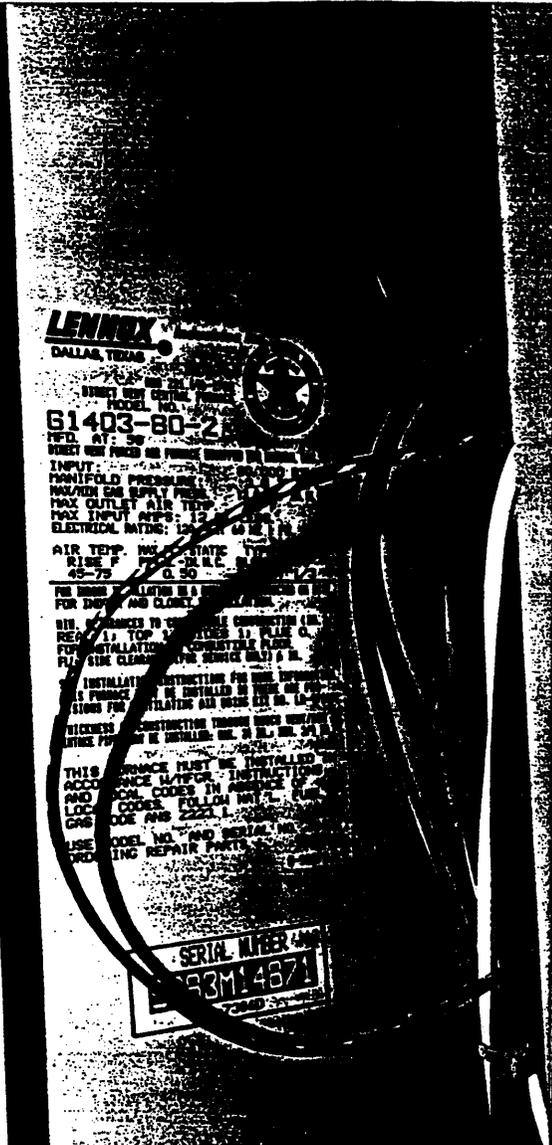
Don Zielke
Director, Technical Support

DZ/rw

cc: Tom Keefe
Roger Weuve

Exhibit "A"

IDI# 930315CCN1169



Left: Another photo of the identification plate.
Below: Photo of the flue venting and outside air intake pipes.

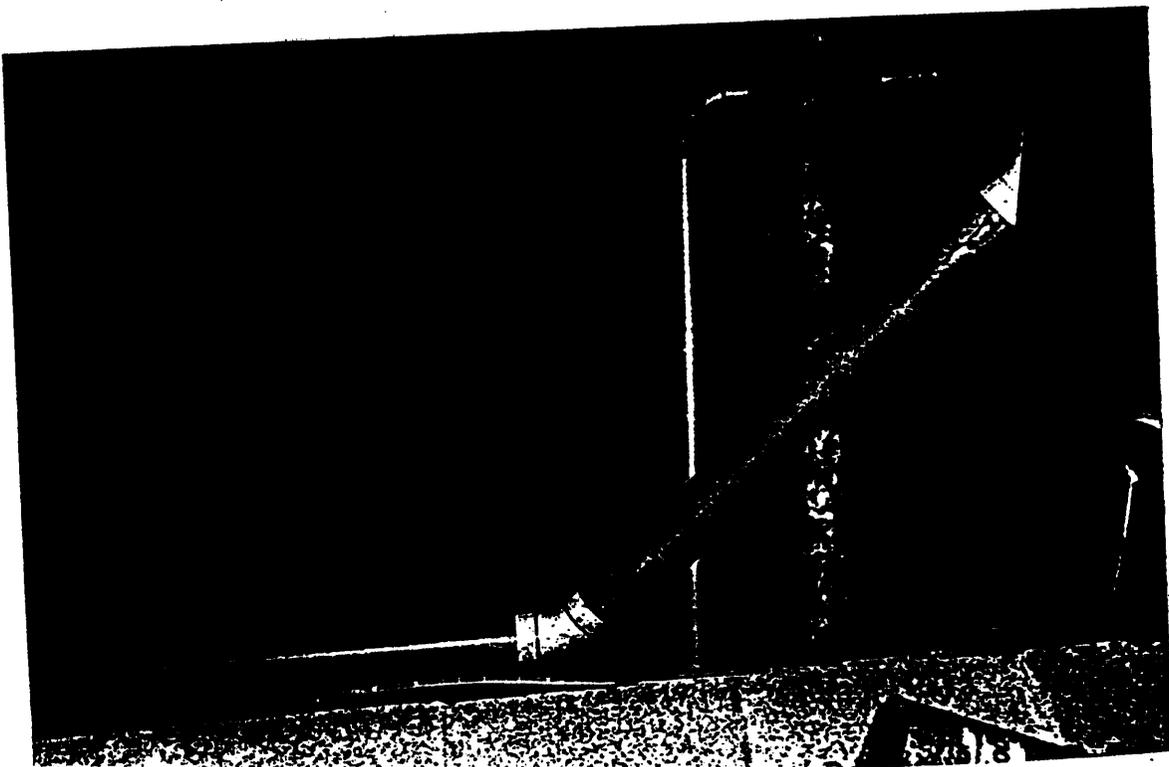
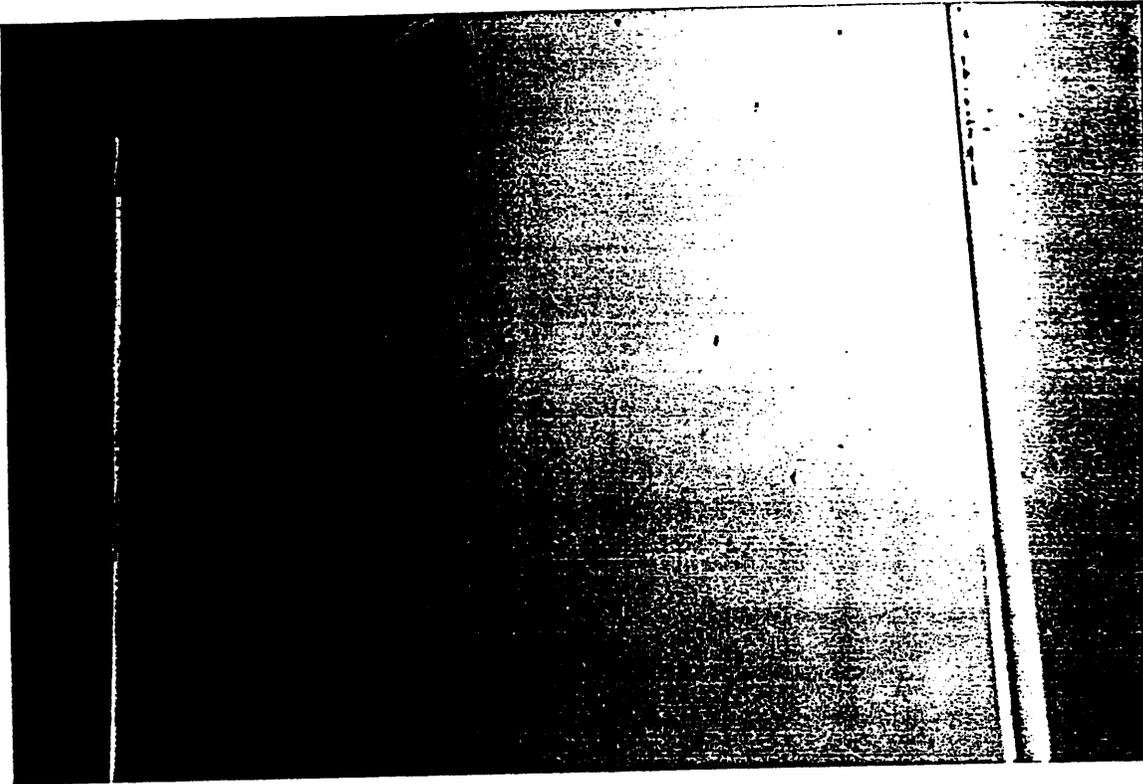


Exhibit "A"

IDI# 930315CCN1169



Photos of the furnace involved in this incident.

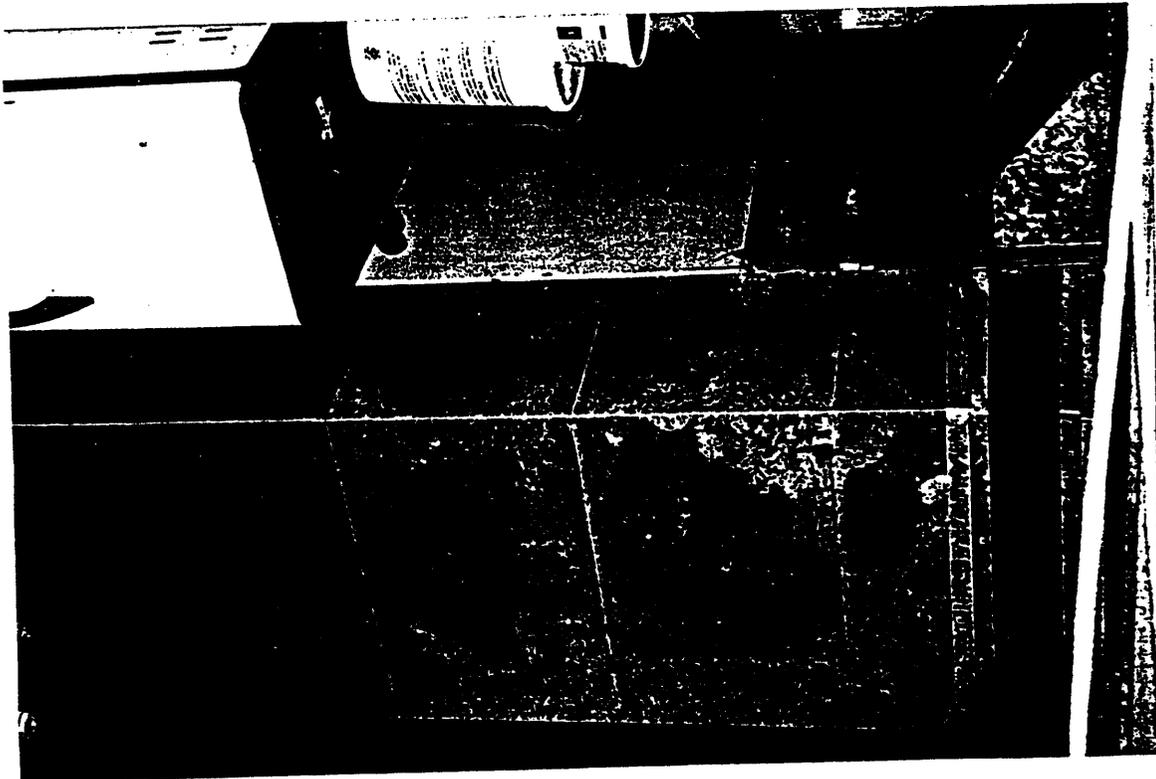
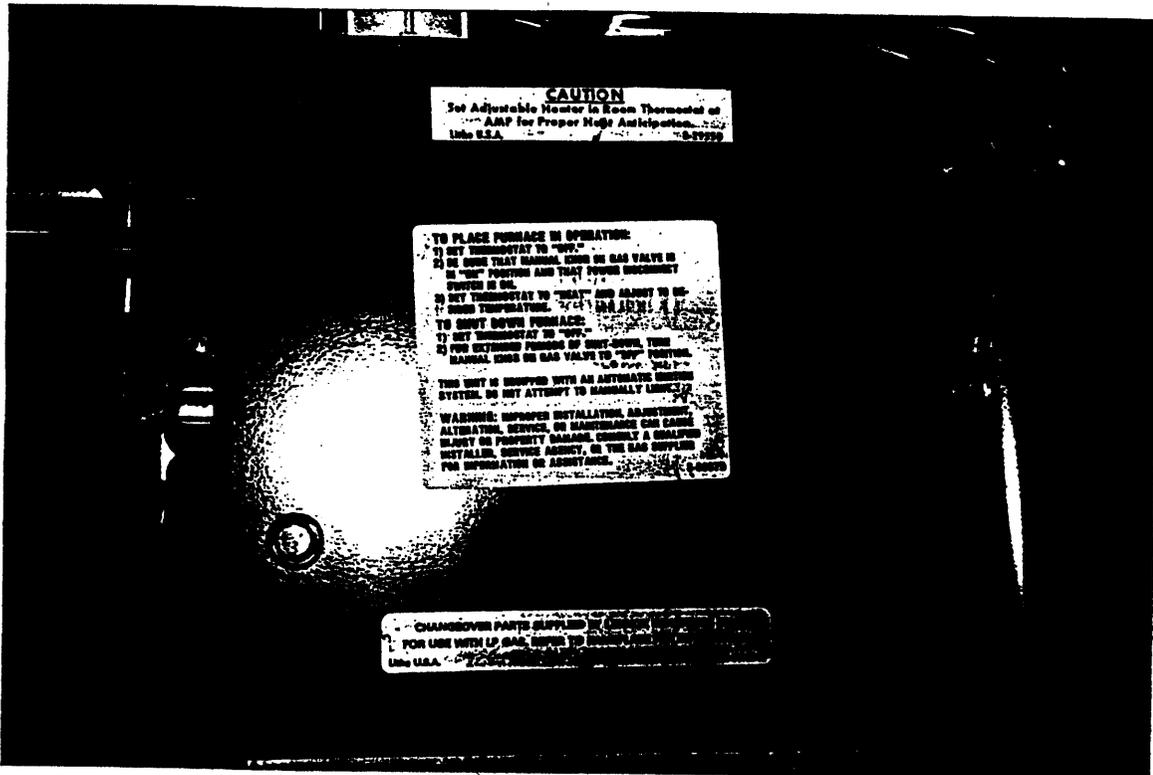


Exhibit "A"

IDI# 930315CCN1169



Warning labeling and other identification found on the furnace.

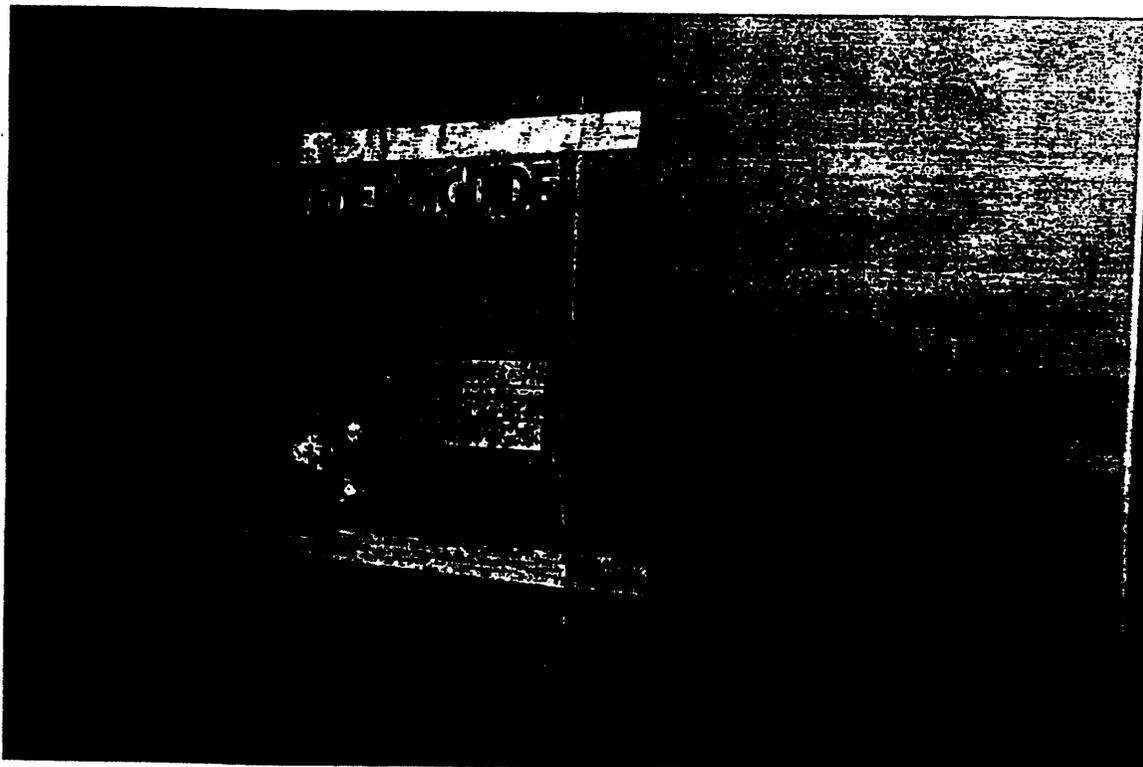
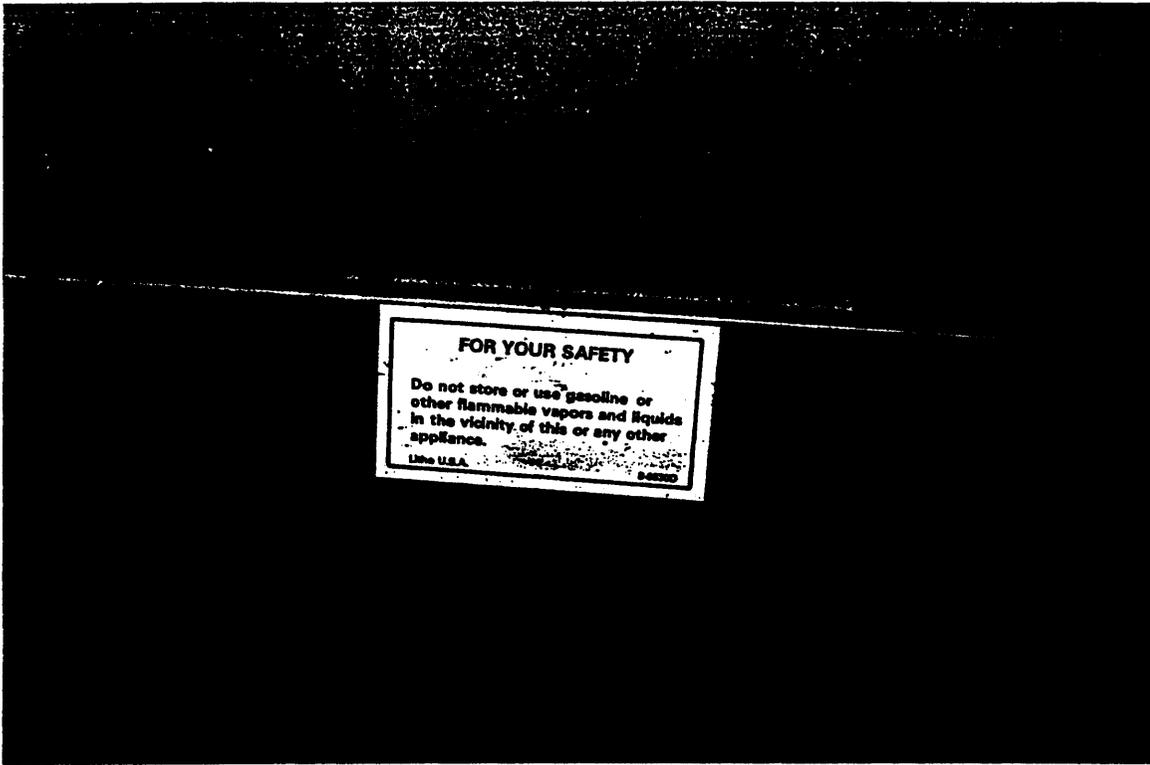


Exhibit "A"

IDI# 930315CCN1169



Warning labeling and other identification found on the furnace.

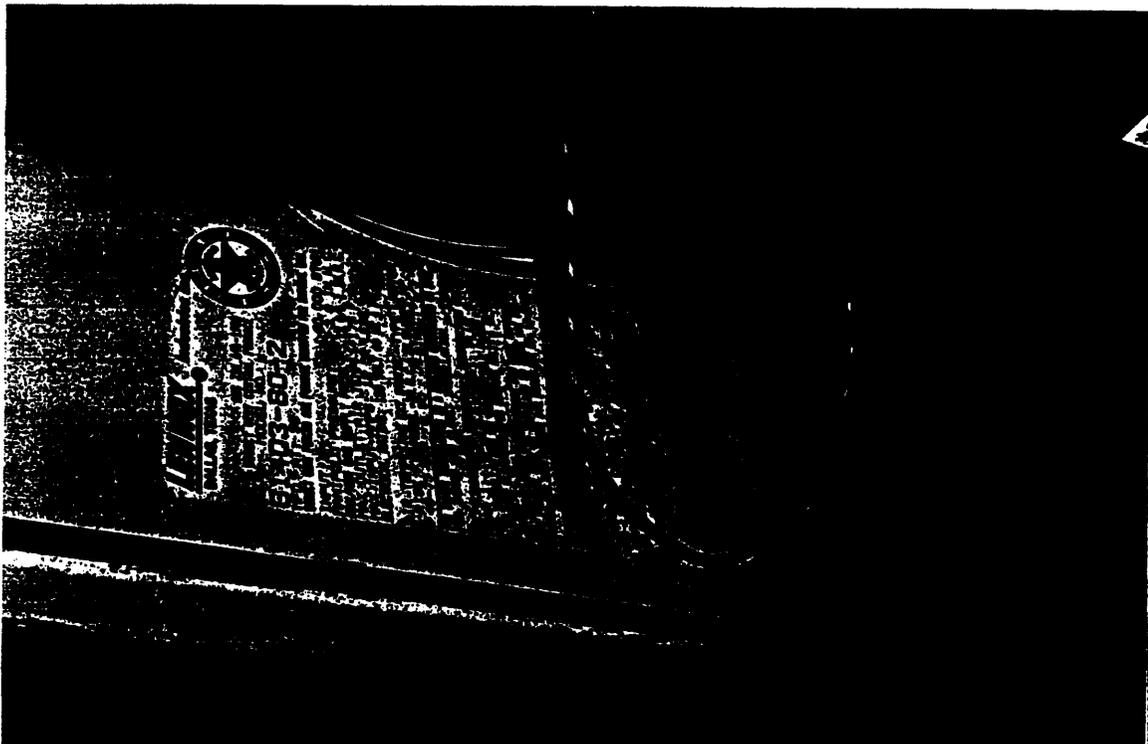


Exhibit "A"

IDI# 930315CCN1169



Above: Horizontally run flue vent piping and air intake piping
at the point where they penetrate the basement wall.
Below: Photo negatives.

NEGATIVES

4 - MAY 1988

1. CASE NO. N8830048 880314NYC5043		2. INVESTIGATOR'S ID 8 1 7 3		3. OFFICE CODE 8 0 5	
4. DATE OF ACCIDENT YR MO DAY 8 7 1 2 1 2		5. DATE INVESTIGATION INITIATED YR MO DAY 8 8 0 3 1 8		EPIDEMIOLOGIC INVESTIGATION REPORT	

6. SYNOPSIS OF ACCIDENT OR COMPLAINT: Two ruptures in the heat exchange system of a high efficiency natural gas forced air furnace allowed combustion products to enter the air circulation system. The furnace was installed in a single family home occupied by a family with 8 children. No one was injured as a result of the failure. For approximately two months prior to the discovery of the failure, ~~the~~ family noticed a strange odor in the home and family members suffered from fatigue. The furnace was removed from the home and the purchase price was refunded by the manufacturer.

7. LOCATION (Home, school, etc.) Home		8. CITY 1 0 Pittsburgh		9. STATE P A	
--	--	------------------------------	--	-----------------	--

10A. FIRST PRODUCT Nat. Gas Furnace 0 3 1 0		11A. TRADE/BRAND NAME, MODEL NUMBER, MANUFACTURER & ADDRESS Lennox Industries, Inc. Dallas, TX Mod #G14Q5-130-2			
---	--	--	--	--	--

10B. SECOND PRODUCT N/A		11B. TRADE/BRAND NAME, MODEL NUMBER, MANUFACTURER & ADDRESS			
----------------------------	--	---	--	--	--

12. AGE OF VICTIM 9 9 9		13. SEX (Use numerical code) MALE -1 FEMALE -2 UNKNOWN -3 9		14. DISPOSITION No Injury 0		15. INJURY DIAGNOSIS No Injury 7 0	
----------------------------	--	---	--	-----------------------------------	--	--	--

16. BODY PART 9 9		17. RESPONDENT(S) (Mother, Friend) Complainant 1		18. TYPE INVESTIGATION ON SITE 1 TELEPHONE 2 OTHER 3 1		19. TIME SPENT 1 2 0	
----------------------	--	--	--	--	--	-------------------------	--

20. ATTACHMENTS Multi 9		21. CASE SOURCE Complaint 0 7		22. REVIEWED BY 8 2 1 1 YR MO DAY 8 8 0 4 2 9			
-------------------------------	--	-------------------------------------	--	--	--	--	--

23. PERMISSION TO DISCLOSE NAMES (NON-NEISS CASES ONLY)

CPSC MAY DISCLOSE MY NAME

CPSC MAY NOT DISCLOSE MY NAME

24. NARRATIVE (See Instructions on Other Side)

PRE-INCIDENT

25. REGIONAL OFFICE DIRECTOR REVIEW
Raymond Benson
DATE 4/29/88

The family involved in this incident consist of a middle-aged husband and wife and their 8 children. The children are 6 boys ages 19, 17, 16, 14, 11, and 11. The girls' ages are 14, and 8. According to the complainant, father, they are a normal, healthy family. No one in the family suffers from any physical disabilities or allergies.

MFR/PRVLBR NOTIFIED *Mr 6/5/88*

No Comments made

Comments attached

25c Excisions/Revisions

Firm has not requested further notice

PRE-INCIDENT (CON'T)

The family purchased the house involved in this incident in April 1983. The house is a 2½ story, Georgian Colonial style house with a basement. The house is of brick and tile construction. There is no insulation in the exterior walls of the house. The complainant said the only insulation is behind the knee walls on the third floor. The house's original single pane windows are equipped with storm windows. The ground floor and second floor of the house are each approximately 1200 sq. ft. in area. The third floor of the house is approximately 700 sq. ft. in area.

The complainant said it became apparent during the family's first winter in the house (1983-1984) that the heating system was not adequate. The system could not maintain the house at a comfortable temperature on cold days. There was no duct work to the third floor and areas on the ground and second floors of the house did not have sufficient heat outlets. The third floor bedrooms of the complainant's two oldest sons were heated with electric space heaters. The complainant decided that a new heating system was required to heat the house.

The complainant contracted with a heating contractor in February 1984 for the installation of a new furnace and other related equipment. The installation was completed during March 1984. The installation included a new 130,000 BTU output natural gas fired forced air furnace. The furnace was the largest of its type available made by the manufacturer. The heating contractor determined that the heat output of the furnace was sufficient to heat the house. The installation included addition and modification of duct work to the ground and second floors of the house. Duct work from the heating system was not extended to the third floor because it was not practical to extend the duct work into that area. Electric space heaters were continued as the heat source for the third floor bedroom.

The furnace was installed in the basement of the home in the same location as the previous furnace. The furnace was located along the left side of the house. It was not located in a central location. The furnace did not require a conventional chimney. It was vented directly to the foundation wall with the plastic vent pipe provided with the furnace.

PRE-INCIDENT (CON'T)

The complainant said he immediately was dissatisfied with the noise level of the furnace. He said he was aware that that type of furnace generated noise due to its combustion process. He said although he suspected noise as a potential problem, he assumed that the noise level of the installed furnace would be acceptable. He said the contractor installed insulation in the duct work and in the furnace cabinet to dampen the noise level. He said the contractor completed his efforts to reduce the noise level but the noise level was still not acceptable.

The complainant said except for the noise level, he was satisfied with the operation of the furnace and the efficiency of the heating system. He said the contractor returned in the summer or early fall of 1985 with two representatives of the manufacturer to examine the installation because of the noise complaint. He said he was told by the factory representatives that no further reduction of the noise level was possible. He said he was not satisfied with the noise but he decided to accept the noise level because he was otherwise satisfied with the operation of the furnace.

The complainant said he did not have any problems with the heating system during the following 1985-1986 and 1986-1987 heating seasons. He said he noticed a strange odor in the house when he turned the furnace on in October 1987. He said the odor was present throughout the house. He described it as an electrical burning type odor. The odor was present whenever the furnace was in operation. Outside temperatures did not require the furnace to operate every day or for extended periods during October and November and the odor did not cause any concern. The complainant said he thought the odor was due to dirty ducts or some other minor problem in the house.

The complainant said beginning in December when the outside temperatures got colder and the furnace operated more frequently, the odor became more noticeable. He said he still did not suspect any serious problem in the house.

The complainant said beginning in October and until the problem was discovered, he felt tired and listless. His wife was more tired than usual. The wife is not employed outside the home and normally spends her days in the house.

PRE-INCIDENT (CON'T)

The complainant said except for his 11 year old son, he is not certain whether the children were unusually tired or missed more school days than normal. He said the 11 year old son was noticeably more tired and missed more school than normal. The 11 year old son's bedroom is located on the second floor directly above the furnace. A heating duct runs directly upward from the furnace and exits in the 11 year old son's bedroom near the headboard of his bed.

INCIDENT

The complainant said on 12/15/87, the furnace operated erratically and the odor was stronger throughout the house. Late that evening the furnace would not operate. The complainant called the contractor and the contractor said he could not come to the house until the next morning. The complainant said he left the thermostat set at 70°F and the furnace operated intermittently throughout the night. The furnace was able to maintain a temperature of 58°F on the ground floor of the house with an outdoor temperature in the 30's.

The contractor examined the furnace on 12/16/87. The contractor thought the intermittent operation of the furnace was caused by a problem with the ignition system's primary control. The contractor did not have the part in stock and said he would obtain the part and repair the furnace the next day. The furnace operated intermittently during the night of 12/16/87 and maintained a temperature of 58°F on the ground floor with the thermostat set at 70°F.

The contractor returned on 12/17/87 and installed a new primary control. The furnace operated for a short period and stopped. The contractor could not restart the furnace. The contractor then replaced the air flapper valve which controls the air to the combustion chamber. The furnace would not operate. The contractor then telephoned the manufacturer's area field service consultant who suggested that the contractor cover four holes on the air flapper valve to enrich the air/fuel mixture. The consultant said he would arrive at the home the next day to examine the furnace.

The contractor modified the air flapper valve as suggested by the service consultant. The furnace would not start and the contractor decided to stop work on the furnace until the manufacturer's field service consultant arrived the next day.

INCIDENT (CON'T)

The complainant said the furnace was not operating and the temperature inside the house was 48°F. The children were sent to their grandmother's house for the night. The thermostat was left set at 70°F in the event that it would begin operating. The complainant said the furnace began operating at approximately 2130 hours. He said over a 10 minute period the furnace operated for 45 seconds, 50 seconds and 2½ minutes. The house became filled with the odor but the odor was very strong. The complainant experienced irritation of his respiratory system and turned the furnace off. The complainant telephoned the contractor and informed him of the incident.

The complainant said the contractor and the manufacturer's field service consultant arrived at the house at 0830 hours on 12/18/87. The complainant left work and went home. He said he was advised by the service consultant that there were holes in the furnace's heat exchanger. He said the heat exchanger was not visible but the service consultant reached through an access panel and felt the holes with his hand. The furnace was then disassembled and the heat exchanger was removed.

Removal of the heat exchanger/combustion chamber system from the furnace revealed two holes in the heat exchanger. The holes were located in the approximate two inch diameter stainless steel tubing which connects the combustion chamber to the heat exchanger. The holes were in the "U" bend section of the pipe attached to the top of the combustion chamber. The complainant described the holes as ruptures and said the metal around the holes was bulged outward. The complainant photographed the heat exchanger and the holes. Copies of these photographs were obtained from the complainant and are attached to this report as Exhibit #1.

The complainant said the manufacturer's service consultant ordered a new heat exchanger/combustion chamber unit from the manufacturer. The new unit was expected to arrive three days later. The complainant said after an argument, the service consultant agreed to have the unit shipped air freight for arrival the next day.

The complainant said in a subsequent conversation with the service consultant, he learned that the large size furnace which was in his home was no longer manufactured by the firm. The furnace was discontinued due to the noise problems. They then discussed the noise reduction kit offered by the firm. The kit

INCIDENT (CON'T)

primarily consisted of a new air flapper valve and a smaller gas orifice. The complainant was told that the kit would reduce the noise level but would also reduce the BTU output of the furnace by at least 15%. The complainant agreed to have the kit installed when the new heat exchanger was installed in the furnace.

The new heat exchanger/combustion chamber unit was installed by the constructor on 12/19/87. The noise reduction kit was also installed.

The complainant said after the completion of the repairs on 12/19/87, the furnace operated satisfactorily and without any problems until 12/29/87. The complainant noticed a natural gas odor near the furnace on 12/29/87 and notified the contractor. The contractor discovered a loose gas connection in the furnace. The contractor did not sufficiently tighten the connection during the installation on 12/19/87 because he feared damaging the connection. He tightened the connection and fixed the leak on 12/29/87. The complainant said while the contractor was at the house on 12/29/87, he requested that the contractor set the blower to a higher speed. This was accomplished by changing some electrical connections in a control box.

The complainant said approximately two weeks later the furnace stopped operating and he discovered a blown fuse in the power supply to the furnace. He said he replaced the fuse and the fuse blew when he turned the furnace on. He replaced and blew three fuses before he telephoned the contractor. The contractor came to the house and discovered a wire inside the control box which became detached from its screw connection and was in contact with the grounded metal of the control box. The complainant said the contractor worked inside this box when he changed the fan speed on 12/29/87 and apparently did not tighten a wire connection at that time. The complainant said he did not have any further problems with the furnace until it was removed from the house.

POST INCIDENT

The complainant said he decided he wanted the furnace removed from his house after the holes were discovered in the heat exchanger. He said he realized the danger that the carbon monoxide in the home presented to the family. He said he was concerned because there was apparently no safety device and the furnace was

POST INCIDENT (CON'T)

able to operate with the leaking heat exchanger. He said he was concerned because the contractor (dealer) was not able to diagnose and discover the problem.

The complainant said he wrote a letter, dated 12/29/87, to Robert Burgess, the manufacturer's manager of customer relations located in Columbus, OH. In the letter, the complainant detailed his problems with the furnace and safety concerns. The complainant indicated he expected the firm to remove the furnace and related products from his house and issue a refund. A copy of that letter is attached to this report as Exhibit #2.

The complainant received a response from Mr. Burgess dated 1/8/88. The letter stated that the firm would remove its products from the complainant's home and refund the cost. The letter recommended that the complainant purchase another brand of equipment. A copy of that letter is attached to this report as Exhibit #3.

The complainant said he did not receive a timely response to his 12/29/87 letter to Mr. Burgess. He said while waiting for a response from Mr. Burgess he telephoned the manufacturer's local sales branch and spoke to Thomas Plocki, the branch manager. He spoke to Mr. Plocki on 1/12/88. He received the 1/8/88 letter from Mr. Burgess that next day on 1/13/88. After receiving that letter, he wrote response letters dated 1/16/88 to Mr. Burgess (Exhibit #4) and Mr. Plocki (Exhibit #5).

The complainant spoke to Mr. Plocki by telephone on 2/9/88 and reached a settlement for removal of the firm's equipment and a refund. Details of the conversation were confirmed by a memo from Mr. Plocki to the complainant dated 2/9/88. A copy of that memo is attached to this report as Exhibit #6.

A new furnace was installed in the complainant's home by another heating contractor on 2/22/88. The furnace involved in this incident was disconnected at that time.

The furnace involved in this incident and other Lennox brand equipment was picked up at the complainant's home by the manufacturer on 2/25/88. The complainant received a check in payment for the equipment at that time. A copy of the check stub is attached to this report as Exhibit #7.

VOLUNTARY STANDARDS -

Unknown. The furnace was not available for examination.

PRODUCT IDENTIFICATION

The furnace involved in this incident is a high efficiency type natural gas fired, hot air furnace. The furnace was purchased new from and installed by a heating contractor in the complainant's home in March 1984.

The complainant identified the furnace as a Lennox brand, manufactured by Lennox Industries, Inc., Dallas, TX. The furnace is a Lennox Pulse Model. The model number is G14Q5-130-2. The serial number of the furnace is 5884A04645.

The manufacturer removed the furnace from the complainant's home on 2/22/88.

EXHIBITS

- Exhibit #1 - Photographs of the heat exchanger/combustion chamber assembly. These photographs were provided by the complainant.
- Exhibit #2 - A copy of the complainant's letter dated 12/29/87 to the manager of customer relations of the manufacturer's eastern division headquarters (Columbus, OH).
- Exhibit #3 - A letter dated 1/8/88 to the complainant from Robert Burgess of Lennox Industries, Inc., Columbus, OH. This letter identifies Mr. Burgess as the assistant service manager.
- Exhibit #4 - The complainant's response to Mr. Burgess dated 1/16/88.
- Exhibit #5 - The complainant's letter to Thomas Plocki, Branch Manager, Lennox, Industries, Oakmont, PA dated 1/16/88.
- Exhibit #6 - A memo from Thomas Plocki to the complainant dated 2/9/88.
- Exhibit #7 - A check stub from the firm dated 2/23/88. This covers the payment to the complainant for the cost of the furnace and related equipment removed from the complainant's home on 2/22/88.
- Exhibit #8 - A copy of the installation/operation/maintenance instructions provided with the furnace.

Mr. Robert Burgess, Manager
Customer Relations
Lennox Industries, Inc.
1711 Olentangy River Road
Columbus, OH 43212

Dear Mr. Burgess,

Please be patient with the extensive background information I am about to offer. I do think it important for you to understand the extent of my frustrating experiences that began with the purchase of a Lennox Pulse Furnace in 1984.

My wife and I were married in 1967. Eight children were born to us since that time. In April, 1983 we purchased our current home - a large 12 room Georgian colonial - that we were confident would suit our housing needs. At that time the ages of our children ranged from 4 to 15 (~~15~~, ~~13~~, ~~12~~, ~~10~~, ~~10~~, ~~7~~, ~~7~~, ~~4~~).

During the first heating season in our home, it became obvious the existing furnace simply was not adequate. Besides having no ductwork to the third floor, there also were no ducts to one room on the first floor and another on the second floor. During that bitter cold winter the old furnace seemed to be running continuously, while the house was still not very comfortable.

I had read of the pulse furnace technology before this, and decided to send for some information. I was impressed with the engineering principles employed in its design, and its reported efficiency, but the reports also indicated that the noise level was a problem. Even so, I inquired further. Soon Mr. ~~XXXXXX~~ of the ~~XXXXXX~~ Heating Company responded.

In February, 1984 I signed the enclosed contract for a Lennox Pulse G14Q5-130 130,000 BTU output furnace, plus a Lennox Electronic Air Cleaner, a Lennox Day/Night Chronatherm, an Aprilaire Humidifier, a lifter pump, and extensive duct work. Before I agreed to the contract, I expressed my serious concerns about the noise level. Mr. ~~XXXXXX~~ arranged for me to visit the home of a customer where he had recently installed a Lennox Pulse. The noise level did not seem at all excessive. Though it was a smaller furnace, I felt confident the reputation of Lennox and ~~XXXXXX~~ would leave me quite satisfied.

Shortly after the furnace was operational, and before the installation was completed, I noted to Mr. ~~XXXXXX~~ the noise level was simply unacceptable. He agreed, and disassembled much ductwork and added insulation to absorb the noise. He had already installed additional insulation inside the control cabinet, and took pains to eliminate other potential sources of vibration around the PVC intake and exhaust pipes and also the gas line.

Mr. [REDACTED] sent me the enclosed statement dated 4/2/84. This included a charge for an additional \$345. My letter to Mr. [REDACTED] of 4/9/84 is also included. You may note that I clearly expressed my dissatisfaction with the noise level, but felt he had done all he could. Furthermore, I indicated that given the din, a Lennox Pulse would not have been my choice. I also noted he should seek relief from Lennox. Though I was still not satisfied, I accepted the job as complete since it seemed nothing much more could be done. Besides, the heating season was nearing an end, and the continuous demands of our large family left me short of time to deal with the matter.

Several months later, Mr. [REDACTED] returned with Mr. Horner, Field Service Consultant, and Mr. Plocki of the local Lennox branch, to examine the installation. I spoke with Mr. [REDACTED] afterwards. He noted that Messrs. Horner and Plocki agreed he had done all he could to reduce the noise. It was also implied that he received some compensation for his additional expenses. I asked if I might receive some financial relief as well, but I believed him when he responded that Lennox did not even fully compensate him. Again, I decided my time was in greater demand elsewhere.

Except for the aggravating noise, the unit seemed to perform well during the heating seasons of 1984-85, 1985-86 and 1986-87. Our heating bill did decrease significantly.

With the start of the current heating season in October, I noticed a strange odor that I did not recall experiencing before. I did not dwell on it much, and attributed it to possibly dirty ducts, faulty lamp socket, pet cat or to a number of other possibilities. Moreover, the cold days were not prolonged, so the odor was not always present, and I did not think much about it.

Then began the most interesting, frustrating and alarming sequence of events, as the furnace had to operate regularly with lower outside temperatures.

Tuesday, December 15, 1987

The furnace would not run consistently, and the odd odor was stronger. That evening the unit would not turn on. I called Mr. [REDACTED] at 10:30 P.M., and he said he could not come until the next morning. During the conversation, he also noted that he learned there was an update kit available for the furnace that might reduce the noise. Mr. Horner was scheduled to be in Pittsburgh on Friday, December 18. Mr. [REDACTED] would discuss it with him then.

I mentioned the odor, he said dirty ducts or dirty filters could be the cause. Still, we left the thermostat at 70, and the furnace did operate intermittently throughout the night, with the same odor. The temperature outside was in the 30's. The temperature in the house was 58 on the first floor...and considerably colder on the upper floors.

Wednesday, December 16, 1987

Mr. [REDACTED] spent about four hours checking the gas pressure, cleaning the air flapper valve and generally troubleshooting the entire system. He was still there when I arrived home from work. We studied the troubleshooting chart together. He eventually checked the spark from the primary control. Instead of a strong spark lasting 6 to 7 seconds, a weak spark was generated that lasted no more than 1 second. This surely seemed to be the answer. He returned to his shop and found he had none in stock. He called immediately and said he would obtain one from another dealer the next day.

In the meantime, we still left the thermostat at 70. The furnace did operate occasionally throughout the night, and raised the temperature to 58 on the first floor...and the odor was still there.

Thursday, December 17, 1987

Mr. [REDACTED] was again at our home when I returned from work. He installed a new primary control and it produced a much stronger spark for a longer period than the original control. He said the furnace did run for several minutes, but would not start again.

My wife had also mentioned the odor, but he again noted it may be due to dirty ducts, dirty filters, a dead animal in the intake PVC pipe or incomplete combustion leaking back through a faulty air flapper valve.

He replaced the air flapper valve, blew out the air intake pipe - which netted only a few dead bees, cleaned the gas flapper valve, and checked the gas pressure again and again. All with negative results.

Mr. [REDACTED] then placed a long distance call to Mr. Horner, Field Service Consultant, from our home. I was on the other phone. Mr. [REDACTED] expressed his complete bafflement at the problem. Mr. Horner suggested covering four holes on the air flapper valve to enrich the air/fuel mixture - suggesting a possibly faulty pressure regulator. In any event he agreed to arrive at our home by 8:00 A.M. the next day - Friday, December 18.

Mr. [REDACTED] covered the four holes as suggested, but to no avail. Nothing more could be done but wait until Mr. Horner's arrival.

The temperature was down to 48. The house was simply too uncomfortable - particularly for our three younger children. We had to send them to the home of my wife's mother for the night.

I left the thermostat on 70, thinking the furnace might operate for awhile and produce some heat. At 9:30 P.M., it did come on. During a 10 minute period it ran continuously for periods of 45 seconds, 50 seconds and 2-1/2 minutes. We began to feel some relief. But then that same strange odor was extraordinarily strong! My nose became irritated and I experienced a slight burning sensation in my lungs!! Now I became quite alarmed! I turned the furnace off and immediately called Mr. [REDACTED] to inform him. I said I believed we no longer had a simple problem and asked him to tell Mr. Horner the following morning.

Needless to say, the thermostat was left off after that.

Friday, December 18, 1987

At 8:30 A.M. my wife called me at my office. Messrs. [redacted] and Horner had just arrived. I spoke with Mr. Horner and told him I now believed we had an unsafe product in the house, and it must be corrected immediately. He assured me it would be resolved.

I decided to go home. I simply had to know what was going on. When I arrived, I learned the heat exchanger had failed. Mr. Horner then said a new one was ordered and would be placed on a truck in Detroit that same day.

This news sapped my last reserve of patience! The heat exchanger would not arrive before Monday, 12/21! We would have to experience at least three more days without heat in the house! I insisted the heat exchanger be shipped via air freight. The response was puzzlement, "...don't know if that can be done....sounds expensive....customer would have to pay for the difference if it could be done...". This was too much. Ten people living in the house without heat for up to a week was completely unacceptable, not to mention the damper it placed on our preparation for Christmas!!!

I could only raise their sensitivity to the situation by utterly exploding, and demanding the heat exchanger be shipped air freight at Lennox's expense! Mr. Horner then called his branch office. Mr. Plocki authorized the shipment.

Mr. [redacted] and Mr. Horner then proceeded to dismantle the furnace in preparation for the replacement heat exchanger. I observed the entire procedure. While working, Mr. [redacted] asked if I wanted the original primary control reinstalled. I told him to leave the new primary control installed.

During our subsequent conversation I learned the G14-130 is no longer offered by Lennox, ostensibly due to the noise factor. When I asked about units already installed, Mr. Horner said he brought an update kit with him from his home, and that it was the last one he had. He and Mr. [redacted] then explained the kit consisted of some additional insulation plus a new air flapper valve and smaller gas orifice. I was also told this would reduce the BTU output of the furnace by at least 15%.

I then asked when this kit was made available. The response was "...about three years ago". I then asked how Lennox informed its customers about the kit's availability, only to learn Lennox depended on its dealers.

By 11:00 A.M. the furnace was completely dismantled.

We again made arrangements to send some of the kids to stay with my wife's mother. Also, we brought mattresses to the living room and brought in two electric heaters to take the chill out for the night.

Saturday, December 19, 1987

Burlington Northern Air Express (Air Bill # 918 034 574) delivered the heat exchanger to our home by 11:00 A.M. Mr. [REDACTED] arrived at 1:00 P.M. and left at 8:00 P.M. I again observed the entire procedure. He installed the new heat exchanger, plus the update kit to reduce the noise.

Now what should be done given the following conclusions?

1. The quality of Lennox training must be questioned.

It took three days to diagnose the problem. There is nothing in the troubleshooting guide to suggest inspecting the heat exchanger. Mr. [REDACTED] made numerous calls to fellow dealers. It took a consultant to find the problem.

Also, when Messrs. [REDACTED] and Horner were removing the panel in front of the heat exchanger on Friday, they neglected to remove the heat sensor wires and spark plug wires that ran to the new primary control. These were ripped from the connectors. Wires and connectors had to be taken from the old primary control and installed on the new one on Saturday. In addition, again on Friday, Mr. Horner disconnected the wires in the terminal box on this same panel without giving Mr. [REDACTED] the opportunity to take notes. "You have a wiring diagram," was the casual response to Mr. [REDACTED]'s objection. Both "wiring incidents" cost at least 3 hours of time the next day.

It was obvious Mr. [REDACTED] had no training or experience troubleshooting and replacing a heat exchanger.

2. More timely installation of the noise reduction kit would probably have prevented the heat exchanger from failing.

It obviously reduces the pressure in the combustion chamber by burning less fuel during each combustion cycle. I wonder how many G130 heat exchangers failed after 3 to 5 years.

3. My furnace no longer has the original capacity of 130,000 BTU output.

I now have one with no more than 85% of that capacity with the installation of the update kit.

4. A key safety feature of the Lennox Pulse Furnace failed to perform as designed.

This is evidenced by the persistent odor since October, and the absence of this odor since the heat exchanger was replaced. The furnace operated for two months despite two ruptures in the heat exchanger. I took the enclosed photographs on Saturday, 12/19, before the replacement part arrived.

5. My family's health was placed at risk.

Our childrens' excessive absences from school the past two months are now understandable. I was especially distressed to think of my son (now 11 years old). He persistently complained of being so terribly tired all the time. The wall register is right next to the head of his bed!!!

My wife does not work outside our home. She was living in this foul environment throughout the entire day, every day!!!

I happen to be an avid long distance runner, having completed a marathon last spring. I was puzzled as to why I was getting more sleep these past two months, yet waking up tired, and finding my running times were getting slower.

The linkage to the failed heat exchanger that continued to operate is obvious. It allowed the blower to pump carbon monoxide throughout our home. The odor, according to Messrs. Horner and [redacted] was from incomplete carbon combustion.

Simply put, the entire experience leaves me outraged. Once again, what is to be done? When I received Mr. [redacted]'s enclosed bill (# 1174), I decided to send it to you along following expectations of Lennox.

1. Compensate Mr. [redacted] for the amount of his enclosed bill - \$232.08.
2. Arrange, and pay for, the removal of all Lennox products from my home at the end of the current heating season.
3. Reimburse me for the cost of all Lennox products installed in our home. Furnace \$2700, Electronic Air Cleaner \$600, and Lennox Day/Night Chronatherm \$100.

The remaining \$988 of the original contract was for the humidifier and additional ductwork Mr. Gibson installed.

My expectations were reasonable when I contracted for the work in the first place.

My wife and I sought to make our home a comfortable and safe haven.

We wanted the best and were willing to pay for it!

I was confident of the reputation of the Lennox name!

I was sold on the engineering principles of the pulse furnace technology!

I was certain we would have a reliable unit, and that any problem would be diagnosed promptly!

As of now I have no confidence in the Lennox name in terms of reliability, service, and - most importantly - SAFETY!!!

Many associates of mine have been urging me to seek legal redress given the clear absurdity and injustice we have suffered. I chose to first take this direct route.

By purging our home of the Lennox name, you will get rid of a dissatisfied customer, and we will use the funds to replace the system with non-Lennox products!

Most sincerely!!!

Phone: Home
Office

LENNOX Industries Inc.

EASTERN DIVISION

HEATING/AIR CONDITIONING
ESTABLISHED 1895

January 8, 1988

1711 OLENTANGY RIVER ROAD
P.O. BOX 1319
COLUMBUS, OHIO 43216
Phone: 614/421-6000

RE: Lennox Pulse Furnace - G14Q5-130
Date of Installation - February 1984

Dear Sir:

I am sorry to learn of the vexing problems you have experienced with your Lennox Pulse furnace. To try to determine why the heat exchanger failed would be pure speculation on my part. Apparently Mr. (DLR) spent a great deal of time and effort trying to make the furnace run but never checked the heat exchanger. Continuously subjected to high temperatures, heat exchangers can fail and should always be checked no matter how trivial the service call may seem to be.

As far as the Lennox quality of training is concerned, Lennox maintains year around facilities for job related training on all Lennox products and urges the dealers and contractors to attend. The Field Service Consultants provide frequent short-course seminars and again the technicians are urged to attend. However the dealers and contractors are independent business men who set their own business policies operating under local codes and license. We cannot make them attend.

I have discussed the situation with our Branch Manager, Mr. Tom Plocki. Even though Lennox Industries was not privy to any contract between you and the (DLR) Company arrangements will be made to remove the Lennox products from your home and the cost thereof refunded to you as soon as possible following which I recommend you seek another brand of equipment.

Again I am sorry you have been discomfited but I'm sure you'll find the same type of failure can occur with any manufacturers products.

Yours truly,

LENNOX INDUSTRIES INC.

Robert T. Burgess
Robert T. Burgess
Assistant Service Manager

RTB/jw

cc: Tom Plocki
Bud Horner
Bill Drake
Jim Hinrichs

880314 NYL5043 Ex#3

Mr. Robert T. Burgess, Assistant Manager
Customer Relations
Lennox Industries, Inc.
1711 Olentangy River Road
P. O. BOX 1319
Columbus, OH 43216

Dear Mr. Burgess,

I received your letter of January 8 just a few days ago - January 13.

In your letter you stated that, "...heat exchangers should always be checked no matter how trivial the service call may seem to be." This certainly sounds reasonable. I just wonder why it is not mentioned in the Troubleshooting Guide for the Lennox Pulse Furnace. I happen to have a copy.

Concerning Lennox training courses, you noted that "...dealers and contractors are independent business men...We cannot make them attend." I find this unreasonable. Lennox products are represented to the ultimate customer by these business men. It certainly would be in the best interests of the consumer and Lennox that these representatives have thorough training in the installation and servicing of your products. If you do not require them to participate in the training - and prove their competence - you risk much in terms of customer satisfaction and safety.

By the way, we were more than merely "discomfited". I encourage you to read my letter again. The health and safety of my family was placed at serious risk because your product continued to operate since October with a ruptured heat exchanger. It pumped noxious fumes throughout our home. I will probably always wonder about the possible long term effects on the health of my family.

You also failed to note that I no longer have the furnace I originally paid for. Remember - the installation of the noise reduction kit also lowered the capacity of the unit by at least 15%.

The only solace I find is that Lennox agrees to remove its products and refund my cost; however, I need more specifics on this matter. I spent considerable time researching modern heating technology before deciding on the Lennox Pulse. This research must now be repeated. Furthermore, the selection of a contractor and scheduling of the installation will take more time. That is why I stated the furnace may be removed after the end of the current heating season. Furthermore, I do not plan to release the furnace and contract with another dealer without the refund in hand. I suppose this will be handled by Mr. Plocki.

inally, you need not have recommended I seek another brand of equipment. A careful reading of my letter of December 29, 1987 - especially the last sentence - should have clearly informed you that I am quite anxious to have a non-Lennox heating system.

Sincerely,

880314 NYL5043 Ex#4

Mr. Thomas Plocki, Branch Manager
Lennox Industries, Inc.
One Allegheny Plaza
Oakmont, PA 15139

Dear Mr. Plocki,

Thanks for returning my call last Tuesday - January 12. It had been two weeks since I sent my letter to Mr. Burgess, and I found it frustrating in not being able to have a call returned - Thursday, January 7 - and receiving either no answer or busy signals on succeeding days.

Enclosed is my letter to Mr. Burgess of December 29, 1987. You also will find Mr. Burgess' reply dated January 8, 1988 and my response to his letter.

I trust you remember your comment to me, "Frankly, I don't think you were very fair to us." Please do take the time to carefully read my first letter. The SAFETY issue continues to be the main source of my dissatisfaction.

With my letter to Mr. Burgess, I enclosed color photographs of the heat exchanger. I have not yet obtained additional prints, but the heat exchanger is still in our basement. I invite you to visit us to inspect it. It is incredible that it still functioned with two major ruptures.

Please call soon so we can work out the details of the agreement.

Sincerely,

880314 NYL5043 Ex# 5

Memo

FROM THE DESK OF ...

TOM PLOCKI

2-9-88

M.

Per our phone conversation
today - We will refund you
\$3400⁰⁰ for your Lanny equipment as
conveyed to you in John Bryson's letter.
In addition we will refund you 233⁰⁰
for your expense in changing Head & change.

Please advise when the change
of equipment will be made so we can
pick up the equipment & refund
Money to you. We plan to do that
at a date we mutually set up
within a reasonable time of the change.

Tom Plocki

880314N465043 EX#6

CONSUMER PRODUCT INCIDENT REPORT

105 107
11/11/87
3/11

5. Give details of accident, injury, or illness. Describe how incident occurred. (Use reverse side if necessary.)

The furnace was installed in the complainant's home during 3/84. The home is occupied by complainant, wife and 5 children. The complainant noticed a strange odor in the home during 10/87 and family members experienced headaches. During the week of 11/11/87, the furnace began to operate intermittently. Examination by a Lennox representative revealed that the heat exchanger was ruptured and combustion products were entering the home. The heat exchanger was replaced. The complainant was not satisfied because he feared the problem would recur. The furnace was replaced with a different brand on 2/12/88 and the complainant received a full refund from Lennox. The complaint is satisfied with Lennox.

6. If injury or illness: Victim's Name NO TREATMENT Relationship _____
 Age _____ Sex _____ Date _____ Type Injury _____
 Body Part Involved _____ Treatment _____

7. Description of Product
GAS FURNACE

8. Was the product:
 Damaged before incident? Yes No
 Repaired before incident? Yes No
 Repaired after incident? Yes No

9. Brand Name
LENNOX

10. Identifying Numbers, Letters, etc.
MOD # G14 Q5-130-2

11. Manufacturer's Name and Address
LENNOX INDUSTRIES
1711 Orlinburg Run RD.
COLUMBUS, OH 43212

12. Dealer's Name and Address
REQUESTED NAME
WITHHELD

13. How product acquired?
 Purchased New Second Hand Other _____

14. Age of Product
4 YRS

15. Is product available for inspection?
 Yes No
 Other _____

16. Does product have warning labels or instructions? Are they available? N/A Yes No
 Yes No

17. Have you contacted the manufacturer? If not, do you plan to contact them?
 Yes No
 Yes No

18. Do you object to the use of your name?
 Yes No

FOR ADMINISTRATIVE USE ONLY

19. Receiving Office
PIT

20. Date Received
3/19/88

21. Received by
BCF

CPW 3/11/88

23. Source of Report
 Letter Phone Visit Other _____

22. Reporting Office
NS 3 0048

25. Follow-Up Action
IDI 880314 NYC 5043 - GPT

26. Product Code(s)
A. 0310
B.

28. Distribution
EPDS/FOCP/GPT/FOCP CF

29. Endorser's Name/Title
Raymond Benson

U. S. CONSUMER PRODUCT SAFETY COMMISSION

AUTHORIZATION FOR RELEASE OF NAME

Thank you for assisting us in collecting information on a potential product safety problem. The Consumer Product Safety Commission depends on concerned people to share product safety information with us. We maintain a record of this information, and use it to assist us in identifying and resolving product safety problems.

We routinely forward this information to manufacturers and private labelers to inform them of the involvement of their product in an accident situation. We also give the information to others requesting information about specific products. Manufacturers need the individual's name so that they can obtain additional information on the product or accident situation.

Would you please indicate on the bottom of this page whether you will allow us to disclose your name. If you request that your name remain confidential, we will of course, honor that request. After you have indicated your preference, please sign your name and date the document on the lines provided.

You are hereby authorized to disclose my name and address with the information collected on this case.

My identity is to remain confidential.



(Signature)

3/29/88

(Date)

880314NYC5043

SEVEN PHOTOGRAPHS OF THE HEAT EXCHANGER/COMBUSTION CHAMBER ASSEMBLY INVOLVED IN THIS INCIDENT. THESE PHOTOGRAPHS WERE PROVIDED BY THE COMPLAINANT.

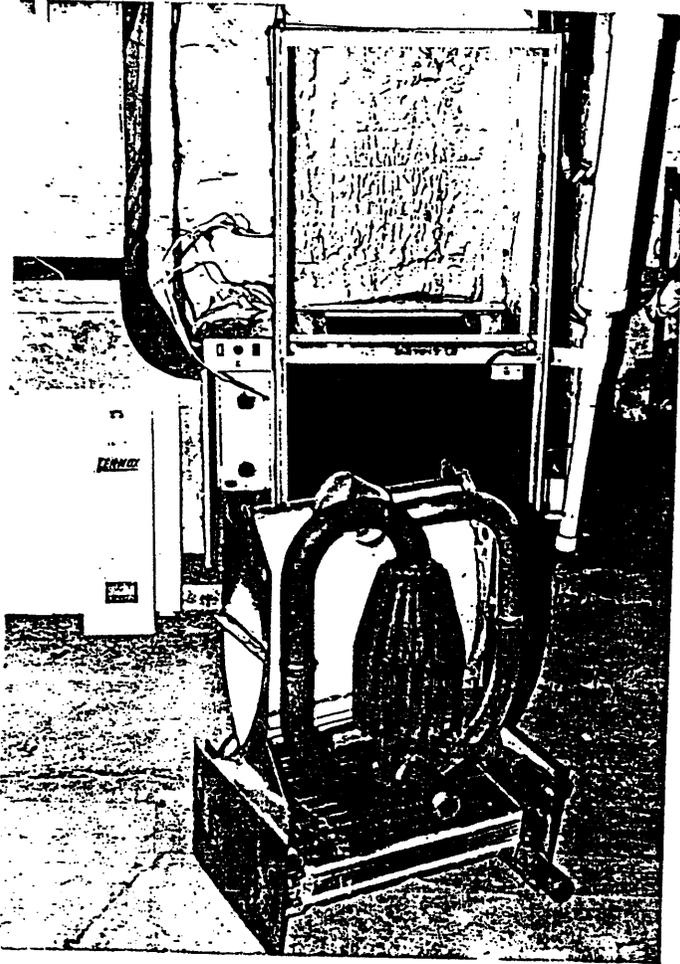


PHOTO #1: The subject unit with the furnace in the background,

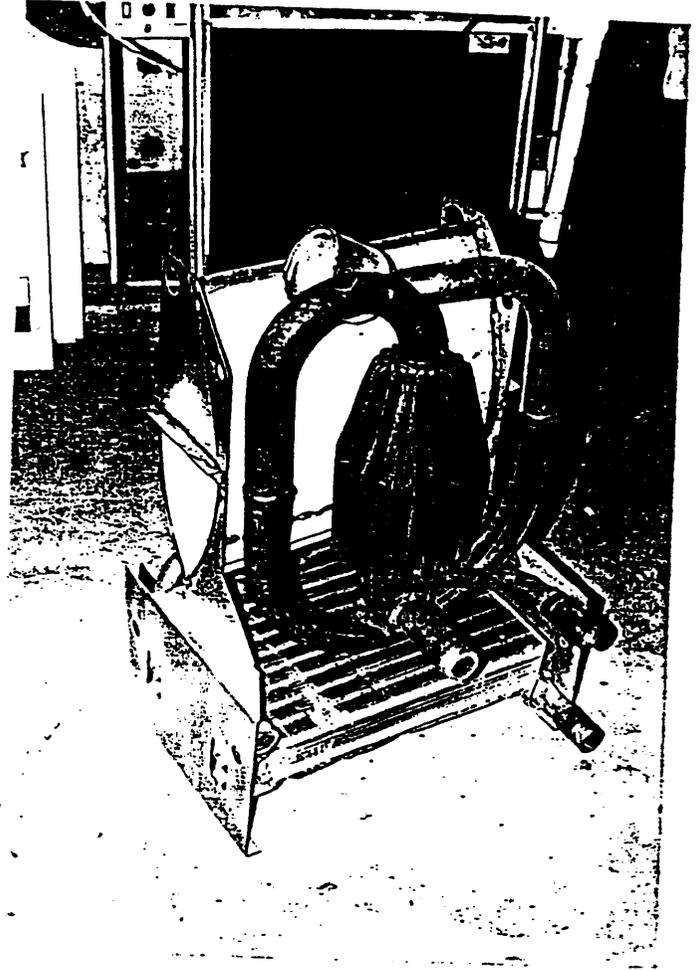


PHOTO #2: Close-up view of the subject unit. Note the two "ruptures" in the U bend section of the manifold ata. to the top of the combustion chamber.



PHOTO #3: The rupture closest to the top of the combustion chamber.

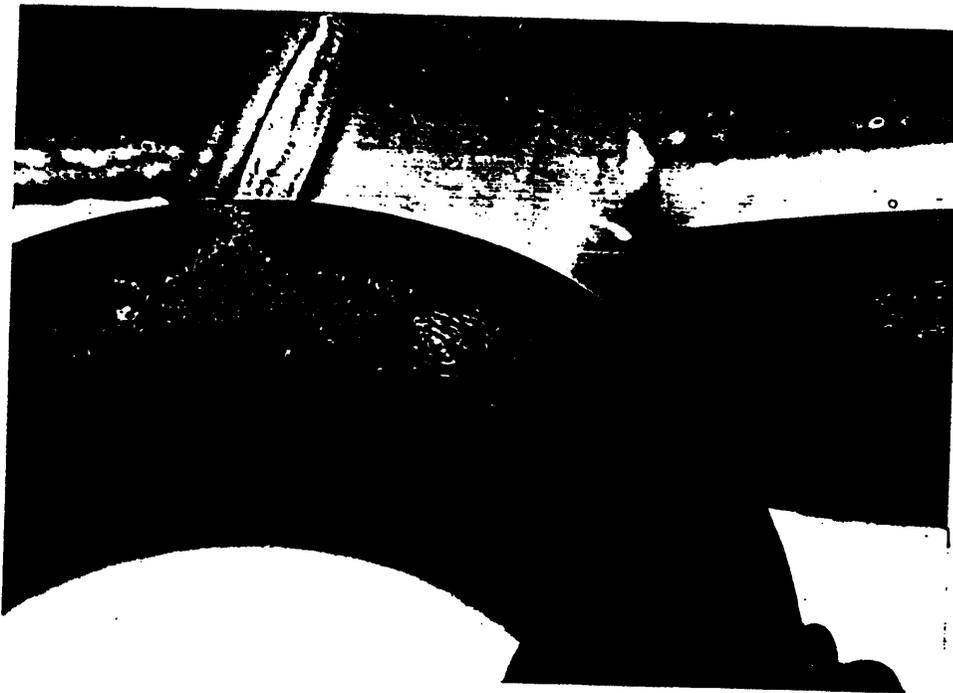


PHOTO #4: Close-up of the rupture closest to the combustion chamber.

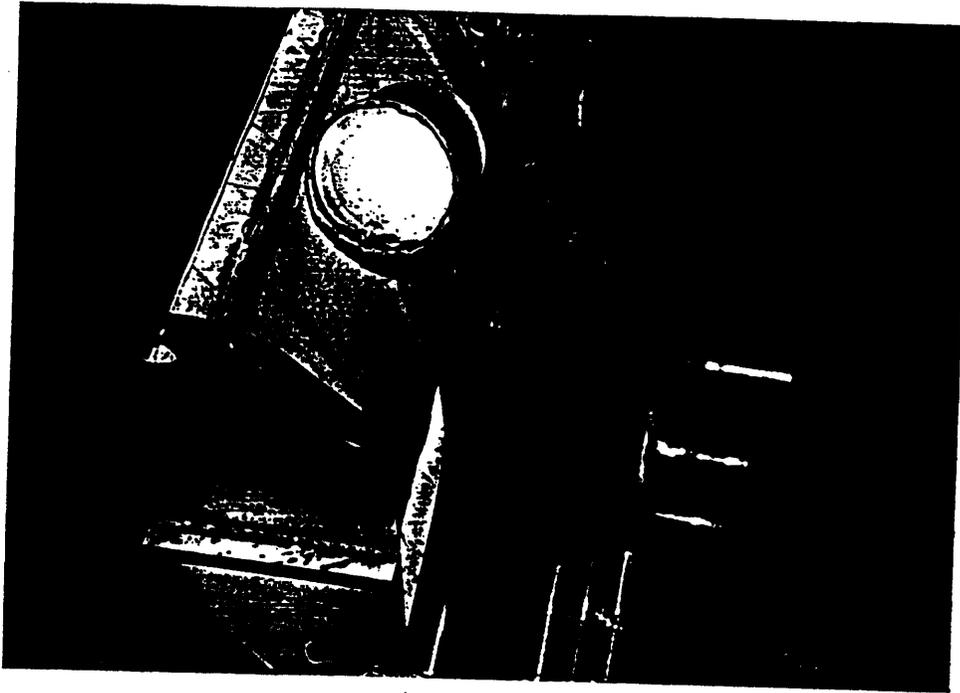


PHOTO #5: The location of the "2nd" rupture. Note the lifted metal around the edges of the "1st" rupture in the background.

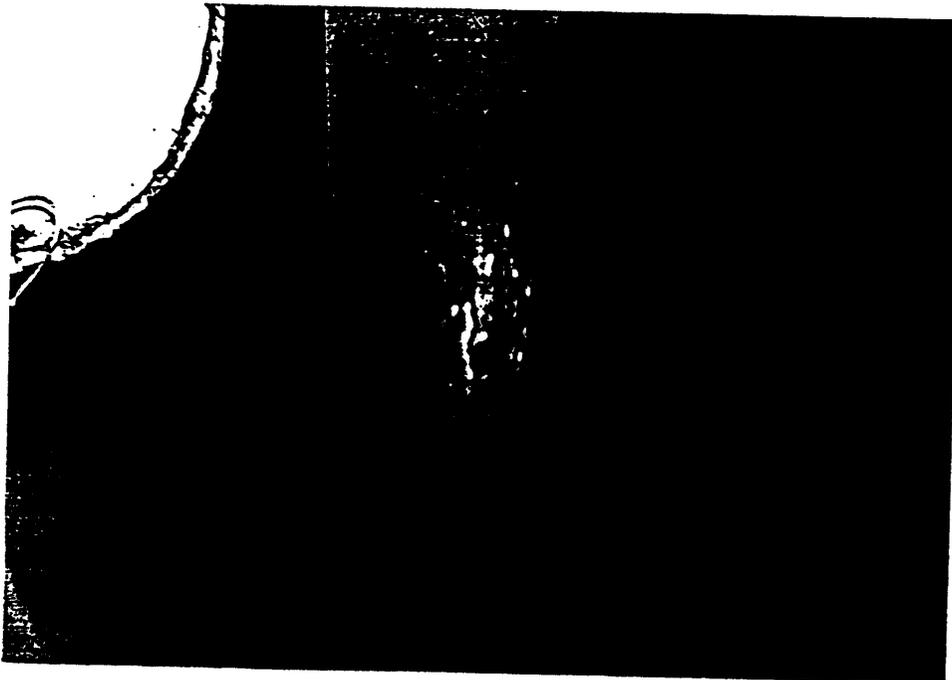


PHOTO #6: Close-up of the "2nd" rupture.

880314NYC5043

EXHIBIT #1



PHOTO #7: A view showing both ruptures and the lifted metal around the edges of the "2nd" rupture (rupture on left).

installation - operation - maintenance instruction

G14 SERIES UNITS

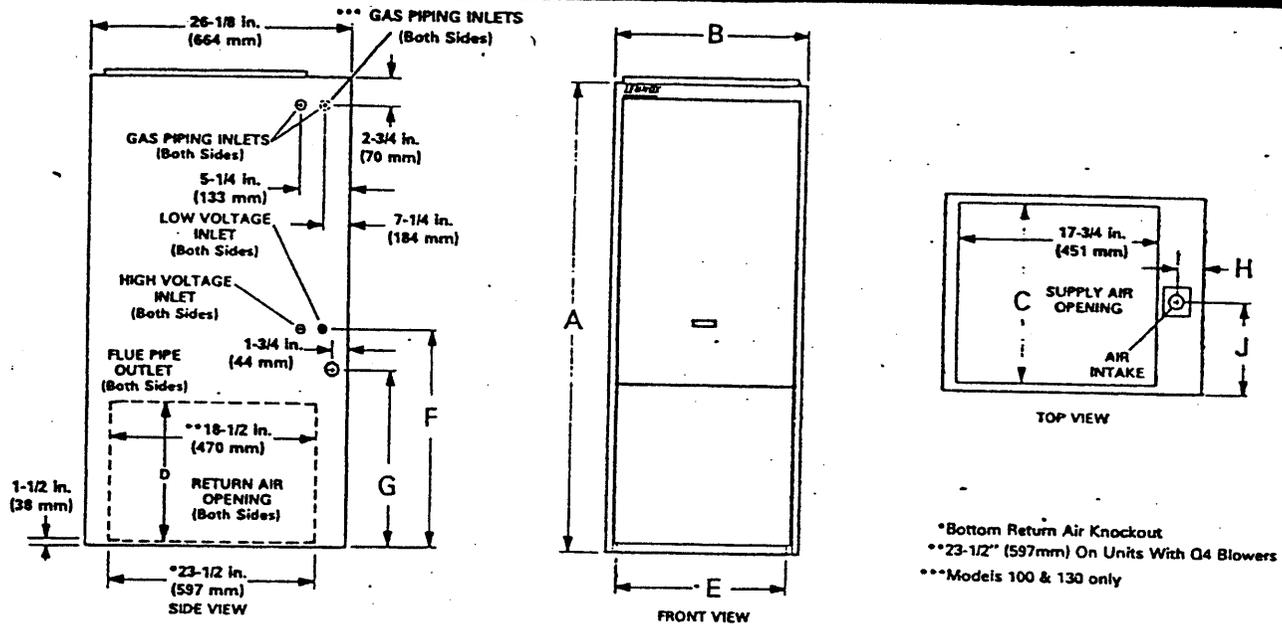
Gas Units
501,743M
6/83

Supersedes 4/83

LENNOX Industries Inc.

Litho U.S.A.

UNIT DIMENSIONS



Model No.	A	B	C	D	E	F	G	H	J
40, 60 and 80 Series	49 in. (1245mm)	21-1/4 in. (540 mm)	19-1/16 in. (484 mm)	14-1/2 in. (368 mm)	14-1/2 in. (368 mm)	23-5/8 in. (600 mm)	20-1/4 in. (514 mm)	4-1/8 in. (105 mm)	8-1/2 in. (216 mm)
100 and 130 Series	53 in. (1346mm)	26-1/4 in. (667mm)	24-1/8 in. (613mm)	20 in. (508mm)	21 in. (533mm)	27-5/8 in. (702 mm)	24-1/2 in. (622 mm)	1-7/8 in. (48 mm)	11 in. (280 mm)

CHECK POINTS

START-UP AND PERFORMANCE CHECK LIST

Job Name _____ Job No. _____ Date _____
 Job Location _____ City _____ State _____
 Installer _____ City _____ State _____
 Unit Model No. _____ Serial No. _____ Serviceman _____

HEATING SECTION

Electrical Connections Tight?
 Supply Voltage _____ Blower Motor Amps _____
 Blower Motor Lubrication O.K.?
 Gas Piping Connections Tight & Leak-Tested
 Fuel Type: Natural Gas? LP Gas?
 Furnace BTU Input _____
 Line Pressure (7" Natural Gas) _____

Regulator Pressure (Refer to unit nameplate) _____
 Exhaust Connections Tight?
 Intake Connections Tight?
 Fan Control Setting (90° Factory Setting) _____
 Temperature Rise _____
 Filters Clean & Secure?

THERMOSTAT

Calibrated? Heat Anticipator Properly Set? Level?