

~~RESTRICTED~~

## Memorandum

TO : Marvin Everhart, CACA  
 Through: David Thome, Director, CACA *DT*  
 Through: Nicholas Marchica, OPM *NMM*  
 Through: William H. King, Jr., Director, ESES *WAK*

FROM : Thomas Cooper, ESES *Thomas Cooper*

SUBJECT: PSA #1298, Lennox Gas-Fired Central Furnace

DATE: 24 SEP 1984

This memo provides my evaluation of the reported problem and the adequacy of the fix.

The product is a gas-fired central furnace made by Lennox Industries Inc. It uses a pulse combustion process and is a high efficiency design which results in a low exhaust gas temperature (about 100°F) and includes an exhaust gas condensate disposal system. The condensate disposal system empties into an indoor drain. Exhaust gases are prevented from passing through the condensate disposal system by a water trap in the system. Exhaust gas is vented, via a PVC vent pipe, 2 inches in diameter. Pressure waves, created by the pulse combustion process, force the exhaust through the vent pipe without the mechanical assistance of a blower. Because the exhaust gas is at a positive pressure, it may be vented horizontally through the outside wall.

The problem is caused by ice forming on the inside of the vent pipe, partially blocking the flow of exhaust gas. The back pressure is sufficient to push the water out of the condensate system water trap and vent exhaust gas into the home, while at the same time, the back pressure is not sufficient to prevent combustion from occurring. If the vent were totally blocked, combustion would cease due to the stoppage of the incoming charge of fresh air and a sensing element would detect the absence of combustion and automatically shut-off the gas flow.

The company attributes this problem to extreme cold and windy weather conditions, the low exhaust temperature (which is a characteristic of a high efficiency furnace) and installation conditions of the exhaust vents. A long path for the exhaust vent through an unheated part of the home will result in cooler exhaust gas and increase the chance for ice to form at the outlet during below freezing temperatures. Also, recirculation of exhaust gas into the furnace air intake, also located outside, may cause short cycling of the furnace which will aggravate the exhaust freezing problem.

The company is preparing to remedy this problem by:

- 1) adding insulation to the exhaust vent so that the exhaust gas retains heat until released to the outside air,

~~RESTRICTED~~

Marvin Everhart - Page 2

- 2) adding a pressure switch to shut-off the furnace at between 2-3/4 to 5 inch w.c. This is less than the 13 to 17 inch w.c. in the condensate water trap,
- 3) adding an air gap on the condensate line to prevent syphonage of the water trap,
- 4) adding a restriction orifice in the outlet side of the condensate water trap to increase the time required to empty the water trap, and
- 5) instruct dealers to follow factory guidelines in installing the exhaust vent termination in relation to the combustion air intake in order to alleviate the short cycling problem.

The company has reported that their operational testing of the fix has demonstrated that the corrective measures are effective. I concur that the fix, consisting of the five changes listed above, is technically adequate.

ID #  
RP #  
HEB #

PRODUCT SAFETY ASSESSMENT (PSA)  
TECHNICAL EVALUATION  
REQUEST

PSA USE ONLY

REQUEST # 1312

TIME/DATE RECEIVED 11:35am/9/18/84

REQUESTED BY:

MARVIN EVERHART  
(Requestor's Name/Title - Please Print)

CACA 9/18/84 PRIORITY: b

(Org. Code) (Date)

(Corrective Actions Use Only)

RECEIVED BY: NICK MARCHICA / PM  
(Name/Title - Please Print)

DATE DUE: \_\_\_\_\_

TITLE OF EVALUATION REQUESTED (Please Print):

DATA base search for LENNOX "Pulse" furnaces = G14 gas furnaces, 40's, 60/80's & 100/130's. Also complaints w: other brand furnaces high efficiency gas furnaces

PRODUCT IDENTIFICATION:

LENNOX Industries, Inc  
(Manufacturer/Importer) (Sample Number - If Applicable)

Product: GAS furnace "Pulse" model furnaces  
(Other Descriptive Information - Brand Name/Model/Etc.)

THIS BLOCK FOR PSA USE ONLY

ASSIGNED TO:

Bill Rowe/EP  
(Name/Organization Code)

DATE ASSIGNED:

9/18/84

ADDITIONAL INSTRUCTIONS:

Requested Date: 9/26/84

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ID #  
RP #  
HEB #

84-105

PRODUCT SAFETY ASSESSMENT (PSA)  
TECHNICAL EVALUATION  
REQUEST

PSA USE ONLY

REQUEST # 1347

TIME/DATE RECEIVED 1:55PM/10/16/84

REQUESTED BY:

MARVIN EVERHART  
(Requestor's Name/Title - Please Print)

CACIA 10/16/84  
(Org. Code) (Date)

PRIORITY: B (Stutler thinks this is an A+)  
(Corrective Actions Use Only)

RECEIVED BY:

NICK MARCHICA/PM  
(Name/Title - Please Print)

DATE DUE:

TITLE OF EVALUATION REQUESTED (Please Print):

EVALUATE degree of health hazard presented by reported problem.

(Use Back of this form if more space is needed)

PRODUCT IDENTIFICATION:

hennox Industries, Inc  
(Manufacturer/Importer)

(Sample Number - If Applicable)

Product: hennox false FurACE  
(Other Descriptive Information - Brand Name/Model/Etc.)

GAS Filled

THIS BLOCK FOR PSA USE ONLY

ASSIGNED TO: WARREN PORTER/HS DATE ASSIGNED: 10/16/84

(Name/Organization Code)

ADDITIONAL INSTRUCTIONS:

File material provided to WARREN PORTER 10/16/84

Requested Date:

Oct. 24, 1984

5

ID #  
RP #  
HEB #

84-105

PRODUCT SAFETY ASSESSMENT (PSA)  
TECHNICAL EVALUATION  
REQUEST

PSA USE ONLY

REQUEST # 1298

TIME/DATE RECEIVED 3:00PM / 9/11/84

REQUESTED BY:

MAARVIN EVERHART  
(Requestor's Name/Title - Please Print)

CACA 9/10/84  
(Org. Code) (Date)

PRIORITY:

b

(Corrective Actions Use Only)

RECEIVED BY:

NICK MARCHICA / PM  
(Name/Title - Please Print)

DATE DUE:

TITLE OF EVALUATION REQUESTED (Please Print):

Please evaluate the attached from firm following up Es memo dated 7/11/84 from Roy Deppa. Is the problem identified? If so, is the modification adequate?  
(Use Back of this form if more space is needed)

PRODUCT IDENTIFICATION:

Lennox Industries  
(Manufacturer/Importer)

(Sample Number - If Applicable)

Product:

Pulse furnace

(Other Descriptive Information - Brand Name/Model/Etc.)

THIS BLOCK FOR PSA USE ONLY

ASSIGNED TO:

ES

DATE ASSIGNED:

(Name/Organization Code)

ADDITIONAL INSTRUCTIONS:

Requested Date: 9/25/84

• ROY DEPPA TO GET T.O. ASSIGNED

~~RESTRICTED DATA~~

November 1, 1984

TO : Nicholas Marchica, OPM *DIVM*  
THROUGH: *Jan* Peter W. Preuss, Associate Executive Director, Health Sciences *AGU*  
THROUGH: Warren K. Porter, Division Director, HSHL *wPorter*  
FROM : Lori E. Saltzman, HSPS and Hugh L. Spitzer, HSHE  
SUBJECT: PSAT #1347, Lennox Gas-Fired Central Furnace

We have reviewed the health information presented in the PSA Technical Evaluation Request of 10/16/84 (# 1347). In brief, field representatives of Lennox Industries, Incorporated, received twenty incident reports on exhaust vents that had frozen partially shut on a number of Pulse model furnaces in December, 1983 and January, 1984. According to Lennox, this resulted in exhaust gases being vented into the houses (the presence of exhaust gas in these homes was not documented). The attached report by Thomas Cooper, ESES to Marvin Everhart, CACA (dated September 24, 1984) provides an evaluation of the specific problem and the adequacy of the fix proposed by Lennox Industries, Incorporated.

The information forwarded by you contained six reports indicating injury and five additional incidents which may have resulted in injury. Residents of all of these homes complained of nausea, headache, or "feeling ill". Some of these individuals were examined by medical personnel and some were given oxygen. According to the information provided, none were hospitalized, and all were sent home without any report of residual ill effects. Although the information presented is very limited, the symptoms (especially where headache is involved) are

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compatible with carbon monoxide (CO) poisoning. The data presented, however, do rule out other causes for these symptoms.

Table 1 summarizes the signs of intoxication produced at various concentrations of carboxyhemoglobin (CO preferentially binds to hemoglobin to produce carboxyhemoglobin [COHb]) (Orzel and Womble, 1980). The clinical findings may vary and all of these symptoms do not necessarily occur in all individuals exposed to carbon monoxide.

Table 1  
SYMPTOMS ASSOCIATED WITH VARIOUS AMOUNTS OF  
CARBOXYHEMOGLOBIN IN THE BLOOD.

<u>% COHb</u>	<u>Symptoms</u>
2.7	Impairment of mental functions.
5.0	Visual impairment. Increased impairment of mental functions.
10.0	Tightness across forehead. Headache. Dilation of cutaneous blood vessels.
15.0	More severe headache. Visual evoked response abnormal.
20.0	Throbbing headache. Nausea. Manual dexterity abnormal.
30.0	Dizziness. Severe headache. Nausea, Vomiting, Syncope.
40.0	Increased respiration and pulse.
50.0	Coma. Convulsions.

Adapted from Lowry, 1984

Assuming that the symptomatology reported by the individuals using the Pulse model furnaces is related to CO, Table 1 suggests that these individuals could have had COHb levels ranging from 10.0 to 20.0%. According to calculations by the Health Sciences staff (Spitzer and Womble, November 1983, see attached graph), 20.0% COHb levels in the blood could be reached in just over one hour following exposure to 400 ppm CO, in approximately 3.5 hours after exposure to 200 ppm, or after prolonged exposure to 100 ppm. COHb levels of 20% or more have been associated with changes in cardiac function in normal individuals and may be potentially lethal for some individuals, particularly those suffering from impaired cardiac function. (Stewart, 1975; Spitzer, January 1983; Spitzer and Womble, June 1983; and Saltzman, 1984).

To conclude, available information suggests the possibility that some individuals may have been exposed to CO released by these malfunctioning furnaces. However, an assessment of the hazard presented by such exposure would require more detailed case histories describing any pre-existing and post exposure medical conditions, the percentage of individuals affected from each household, and data on pollutant air levels.

## References

Lowry WT. 1984. Combustion Toxicology Studies: A Summary. Presented at National Conference on Fire Toxicity Sponsored by U.S. Consumer Product Safety Commission. June 1984.

Orzel R and S Womble. 1980. Health Effects of Carbon Monoxide. U.S. Consumer Product Safety Commission. Washington, D.C.

Saltzman L. August 1984. Carbon monoxide: An Update of its Adverse Health Effects. U.S. Consumer Product Safety Commission. Washington, D.C.

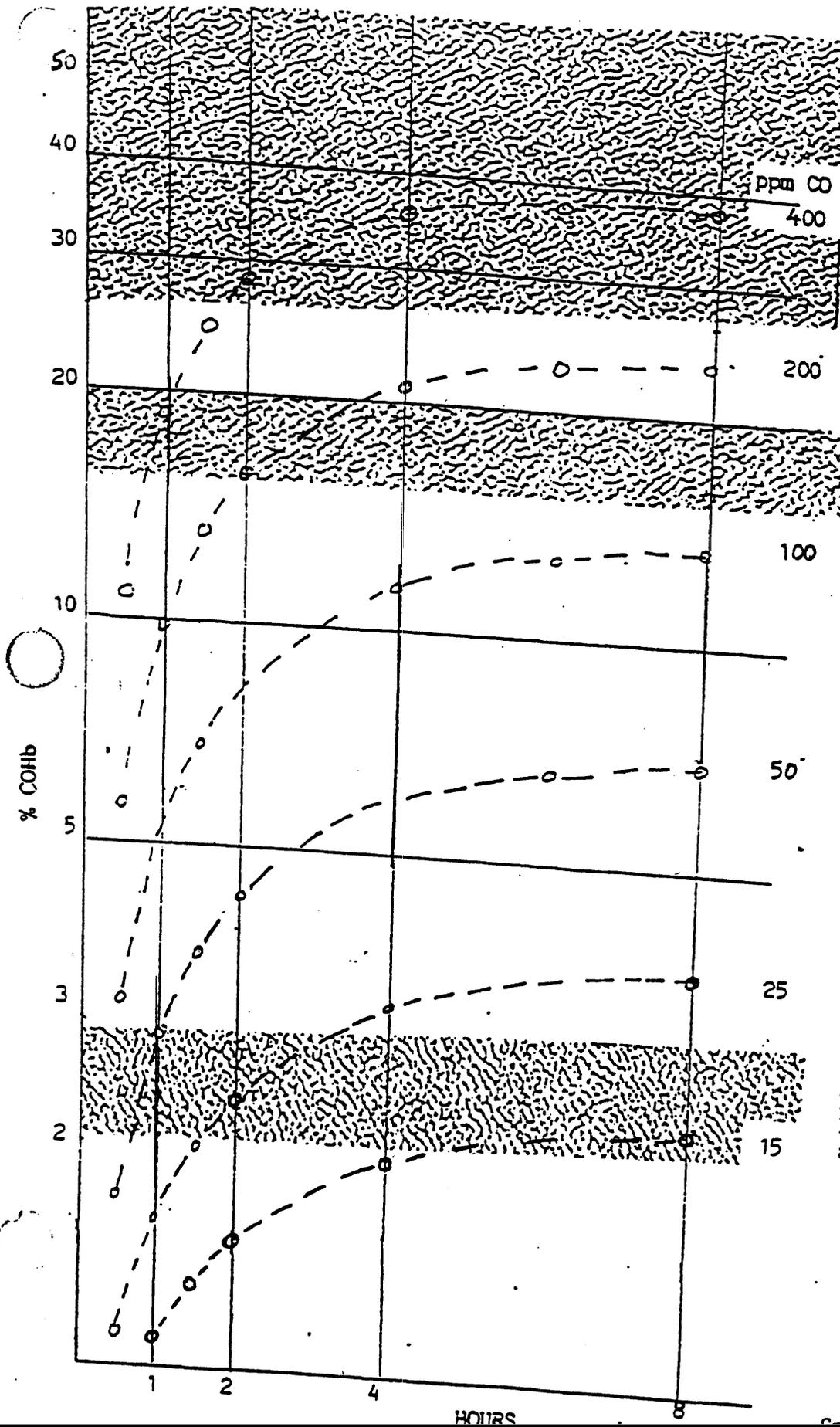
Spitzer HL. January 1983. Update on Adverse Health Effects Associated with Low level Exposure to Carbon Monoxide. U.S. Consumer Product Safety Commission. Washington, D.C.

Spitzer HL and SE Womble. June 1983. Carbon monoxide: Update on Health Effects. U.S. Consumer Product Safety Commission. Washington, D.C.

Spitzer HL and SE Womble. November 1983. Acute Toxic Exposure to Carbon Monoxide. U.S. Consumer Product Safety Commission. Washington, D.C.

Stewart RD. 1975. The Effects of Carbon Monoxide on Humans. Ann. Rev. Pharm. 15:409-23.

CARBOXYHEMOGLOBIN LEVELS ASSOCIATED WITH EXPOSURE TO VARIOUS CONCENTRATIONS OF CARBON MONOXIDE



Reported Deaths.

Predicted deaths severely compromised cardiac patients.

Changes in EKG of healthy young men. Decreased time to pain angina patients.

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ID #  
RP #  
HEB #

PRODUCT SAFETY ASSESSMENT (PSA)  
TECHNICAL EVALUATION  
REQUEST

PSA USE ONLY

REQUEST # 1352

TIME/DATE RECEIVED 2:55 PM 10/24/84

REQUESTED BY:

MARVIN EVERHART  
(Requestor's Name/Title - Please Print)

RECEIVED BY: NICOLE MARCHICH  
(Name/Title - Please Print)

CACIA  
(Org. Code)

10/24/84  
DATE

PRIORITY:

b +

(Corrective Actions Use Only)

DATE DUE:

TITLE OF EVALUATION REQUESTED (Please Print): The exclusion of what appears to be portion of VA east of Blue Ridge Mountains, TN, NC, SC, GA, FLA, AL, MS, LA, TX, AR, OK, AR, NM, CA, and western portion of NE from retrofit program for Pulse Furnace is proposed. ~~Some~~ the units in the excluded area present hazard in light of what Firm

PRODUCT IDENTIFICATION:

Lennox Industries  
(Manufacturer/Importer)

(Sample Number - If Applicable)

has told us and H.S.'s Assessment,

Product: Pulse Furnace

(Other Descriptive Information - Brand Name/Model/Etc.)

THIS BLOCK FOR PSA USE ONLY

ASSIGNED TO:

ES

DATE ASSIGNED:

ADDITIONAL INSTRUCTIONS: Firms info attached.  
(Name/Organization Code)

Requested Date:

By DEPHA to get to assigned

## Memorandum

DATE: 21 NOV 1984

TO: Marvin Everhart  
THROUGH: David Thome, Director, CACA  
THROUGH: Nicholas Marchica, OPM *NVM*  
THROUGH: William H. King, Jr., Director, ESES *WHLK*  
FROM: Thomas Cooper, ESES *Thomas Cooper*  
SUBJECT: PSA #1352 Lennox Gas-Fired Central Furnace

ES had found the Corrective Action Plan to be technically adequate and this had been reported to you in the ES response to PSA 1298 dated September 25, 1984. PSA #1352 requests an assessment of the proposal by Lennox to limit the application of the fix only to geographical areas which experience extreme cold temperature because the problem has been experienced only during extreme cold weather conditions.

The limiting criteria used by Lennox was temperature. A map of the United States provided by Lennox illustrates those geographic areas (by state) where the fix will be applied. It also identifies for each state a minimum temperature and Lennox reports "According to the source of that information, Engineering Weather Data developed by the Department of the Air Force, there is a 99 percent chance that during the winter a state will not experience temperature lower than those indicated on the map". The lowest temperature indicated for those areas where the fix is not applied is 4°F above zero.

The company has reported that the low temperature where the furnace problems were experienced ranged from 20 to 30°F below zero.

Lennox is proposing to implement the fix in those geographic areas where the problems have been reported and other areas as indicated by their map. Based on the information provided by Lennox, I concur with their plan.

*80*

ID # 85-19  
RP # \_\_\_\_\_  
HEB # \_\_\_\_\_

PRODUCT SAFETY ASSESSMENT (PSA)  
TECHNICAL EVALUATION  
REQUEST

PSA USE ONLY

REQUEST # 1442

TIME/DATE RECEIVED 8:30 AM / 1/15/85

REQUESTED BY:

MARVIN EVERHART  
(Requestor's Name/Title - Please Print)

CACA 1/14/85  
(Org. Code) (Date)

PRIORITY: B

(Corrective Actions Use Only)

\* Quickest turnaround  
Approved due to Commission interest

RECEIVED BY:  
NICK MARCATELLA  
(Name/Title - Please Print)

DATE DUE: \_\_\_\_\_

TITLE OF EVALUATION REQUESTED (Please Print):

Please Review submission from Siam (Copy already provided to Tom C. in ES)  
DES - Are Assumptions valid and measurements accurate? Are the conclusions?

(Use Back of this form if more space is needed)

PRODUCT IDENTIFICATION:

Lennon Industries, Inc  
(Manufacturer/Importer)

(Sample Number - If Applicable)

Product: Pulse Gas Furnace  
(Other Descriptive Information - Brand Name/Model/Etc.)

CENTRAL FURNACE

THIS BLOCK FOR PSA USE ONLY

ASSIGNED TO: TOM COOPER/ES

DATE ASSIGNED: 1/15/85

1/15/85

ADDITIONAL INSTRUCTIONS:

Request meeting after work complete w/ CA ES & HS

Requested Date: ASAP  
• BARBARA JACOBSON TO GET H.S. TO. Assigned  
(WANNAN PUTER HAS PREVIOUSLY REVIEWED)  
Health Science (old PSA #1317)

Reached Appropriate or has  
steps been not taken in the tests  
that should have been taken that  
may have affected the conclusions?  
Any questions for firm!

Please Review in consultation  
w/ Tom Cooper in ES. Do charts  
EEF Accurately reflect Data on CO?  
Does this change your earlier response? Do Data Appropriately Tie-in w/ Tests from conducted?

Memorandum

*RESTRICTED*

TO: Marvin Everhart, CACA  
 THROUGH: David Thome, Director, CACA *DTM*  
 THROUGH: Nicholas Marchica, OPM *NM*  
 THROUGH: William H. King, Jr., Director, ESES  
 FROM: Thomas Z. Cooper, ESES *Thomas Z Cooper*  
 SUBJECT: PSA #1442, Lennox Industries ID 85-19

DATE: 29 JAN 1985

This is in response to the above request for ES to evaluate the information that was hand delivered to CPSC in a meeting on January 14, 1985 with Lennox. The information is contained in a letter from Lennox to CACA dated January 11, 1985 and in handouts labeled A through F.

Lennox has submitted measurement data of CO levels in the furnace's flue gas when the vent outlet is blocked. Their data show a maximum level of 310ppm CO which can be compared with the 400ppm CO maximum set by the Z21 voluntary standards.

Lennox also has submitted a calculation of CO concentration in a home if the furnace were venting products of combustion into the home. Their calculations include assumptions such as 100% venting of combustion products into the home, 400ppm CO concentration in the flue gas, an air exchange rate of 0.1 per hour, and continuous operation of the furnace for 2 days or more. The Lennox calculations predict that the maximum level of CO would be 192 ppm.

The PSA request asked ES:

- 1) "are the assumptions valid and measurements accurate?"
- 2) "are the conclusion reached appropriate?"
- 3) "have steps been not taken in the test that should have been taken that may have affected the conclusions?" and
- 4) "any questions for firm"?

In response to the above, I offer the following:

- 1) The set of assumptions used by Lennox are valid for the purpose of predicting levels of CO.

The measurements made by Lennox of CO in the flue products appear to be reasonable in the context of finding out what levels could be present if the vent outlet were blocked. These levels fall below the maximum levels permitted by the voluntary standard. I find no

RESTRICTED

- reason to question the accuracy of the measured data in this case.
- 2) The Lennox conclusion related to the health effects of the carbon monoxide and the CPSC staff's preliminary determination that the furnace presents a substantial product hazard. I have no comment in this area.
  - 3) The Lennox testing demonstrates the conditions necessary to cause the water trap in the condensate line to siphon dry and it provides data on the levels of CO in the products of combustion when the vent outlet is blocked. I do not believe that there were any significant omissions in their testing and I would not suggest additional testing.
  - 4) I have no question for the company.

## Memorandum

TO : N. Marchika, OPM  
 THRU : B. Jacobson, PSAT Team Rep., HSPS, HS *BD*  
 THRU : A.G.Ulsamer, Acting, AED, HS *AGU*  
 FROM : W.K.Porter, Director, HSHL *wkpm*  
 SUBJECT : Lennox Furnace PSAT#1347 and PSAT#1442

2/15/85

A previous communication to you dated 11/1/1984 outlined the typical health effects and symptoms expected with exposure to various concentrations of carbon monoxide (CO). These effects are for "average" people, any individual person may exhibit symptoms at either higher or lower concentrations. Since no exposure information, actual or predicted, was available from the complaint homes or from the manufacturer we can only predict that blood carboxy hemoglobin levels of 10% to 20% many have occurred based on reported symptoms. These levels correspond to prolonged exposures of between 75 and 175 parts per million (ppm) CO.

The data submitted by Lennox, January 11, 1985, which are all predicted concentrations, estimated CO concentrations of up to 200 ppm in a presumably very tight house (0.1 ~~AIR~~ Change per Hour (ACH)). These predicted concentrations are in agreement with the reported symptoms.

The Lennox submission also provided predicted CO concentrations at other air exchange rates and furnace CO production rates. The calculated values of CO concentration for these cases fall between 4ppm and 48ppm. The Lennox corporation predictions appear to be reasonable. The fact that large numbers of complaints were not received indicates that the majority of furnace installations do not cause discomfort or symptoms of CO exposure to become apparent or recognized and reported. There are, in any population distribution, some houses where the "realistic" or average conditions used in predictions would not be met.

Several studies of air infiltration rates (NAS Indoor pollutants; Indoor Air, Vol 4, Stockholm 1984) indicate that although air exchange rates for a group of houses may average from three tenths to over one per hour, some proportion of houses will have much lower air exchange rates (Table 1). These data, in conjunction with symptoms reported, indicate that the reported CO exposure problems are not occurring in the "average" house in which a Lennox furnace was installed but in some small subset of that housing population. Thus the CO concentration Lennox says are "realistic" are not germane to the incidents reported with Lennox installations. Without specific house data for incident homes we must assume that the incidents occurred in the low filtration rate subset of the houses where Lennox furnaces were installed.

During our evaluation of unvented gas space heaters a number of deaths were found where blood carboxy hemoglobin (COHb) levels were reported. These data (Table 2) show the lowest level of COHb associated with death was 26% (exposure of 4 hours or more to 200-250 ppm). Other deaths were associated with COHb concentrations of up to 76%, and occurred in people

from the ages of 19 years to 81 years. Our review of CO poisonings and relevant literature concluded that COHb levels in the 16 to 20% (four or more hours exposure to 100 ppm of CO) may be lethal to people with severely compromised cardiac function (R.D. Stewart (1975) Ann. Rev. Pharm. 15, 409-423). COHb levels in this range may even be life threatening to some normal individuals.

Since the reported symptoms are consistent with exposure to CO concentrations predicted by Lennox of between 75ppm and 175ppm, the magnitude of the exposure problem must be considered in conjunction with the fact that the affected housing population is not represented by the "average" house but is outside the normal range. This group, based on the NAS report, may be between two and ten percent of the housing stock. Prolonged, unusually cold weather and adequacy of flue gas traps should be considered in the assessment of hazard.

Table 1 Reported Air Exchange Rates

<u>NAS Indoor Pollutants</u>		<u>Air Exchange Rates (hr<sup>-1</sup>)</u>	
<u>City</u>	<u>Average</u>	<u>Standard deviation</u>	<u>% of houses with 0.0 to 0.25 ACH</u>
Charlestown, S.C.	1.2	0.86	5
Colorado Spr., CO	0.82	0.51	2
Fargo, N.D.	0.77	0.57	10
Town Houses	0.06 to 2.0	--	--
<u>Indoor Air - Stockholm, 1984</u>			
<u>Investigator</u>			
Woods et. al.	0.37	0.43	--
	0.75	0.55	--
Lawrence Berkeley Laboratories	0.25 to 0.45	--	--
Harvard University	0.3 to	0.41	--
	0.72	0.55	--
Quackenbos et.al.	0.45 to	0.3	--
	0.6	0.5	--
Oak Ridge National Laboratory	0.36 to 0.96	--	--

Table 2  
 DEATHS FROM CO POISONINGS FROM  
 UNVENTED GAS HEATERS  
 FOR WHICH CPSC HAS COH5 LEVELS

% COH5	Record of Death x=CPSC file o=Dr. Davis	Age of Victim Comments
75%	x (76%)	37
70%	x (73%) o (72%)	21 19-Fetus had 84%
65%	o (68%)	81-Coronary His- tory.
60%	o (60%)	21
55%	x (57%) o (56%) y (55%)	35 43 32
50%	x (54%) x (52%)	35 45
45%	x (47%) o (46%) y (45%)	45 77 21
40%	x (43%) x (42%) x (41%)	40 48 57-Hypertensive
35%	x (36%) x (35%)	52 59-Arteriosclera- tic Disease
30%	o (33%) x (33%)	49 23-Cardio Resp. failure
25%	o (26%)	54-Blood Alcohol 0.12%
20%		
15%		
10%		
5%		
0%		

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Table 1 summarizes the signs of intoxication produced at various concentrations of carboxyhemoglobin (CO preferentially binds to hemoglobin to produce carboxyhemoglobin [COHb]) (Orzel and Womble, 1980). The clinical findings may vary and all of these symptoms do not necessarily occur in all individuals exposed to carbon monoxide.

Table 1  
 SYMPTOMS ASSOCIATED WITH VARIOUS AMOUNTS OF  
 CARBOXYHEMOGLOBIN IN THE BLOOD.

<u>% COHb</u>	<u>Symptoms</u>
2.7	Impairment of mental functions.
5.0	Visual impairment. Increased impairment of mental functions.
10.0	Tightness across forehead. Headache. Dilation of cutaneous blood vessels.
15.0	More severe headache. Visual evoked response abnormal.
20.0	Throbbing headache. Nausea. Manual dexterity abnormal.
30.0	Dizziness. Severe headache. Nausea, Vomiting, Syncope.
40.0	Increased respiration and pulse.
50.0	Coma. Convulsions.

Adapted from Lowry, 1984

ID #  
RP #  
HEB #

85-19

PRODUCT SAFETY ASSESSMENT (PSA)  
TECHNICAL EVALUATION  
REQUEST

PSA USE ONLY

REQUEST #

TIME/DATE RECEIVED

REQUESTED BY:

MARVIN EVERHART  
(Requestor's Name/Title - Please Print)

CACA 2/6/85  
(Org. Code) (Date)

PRIORITY:

B

(Corrective Actions Use Only)

RECEIVED BY:

(Name/Title - Please Print)

DATE DUE:

TITLE OF EVALUATION REQUESTED (Please Print): Once the exhaust vent is partially blocked, can the condition of ~~the~~ partial blockage continue for a long period of time - such as one-to-two months? If so, what would be the magnitude of the problem of exposure to CO?

PRODUCT IDENTIFICATION:

Genova Industries, Inc  
(Manufacturer/Importer)

(Sample Number - If Applicable)

Product: Pulse Gas Furnace

(Other Descriptive Information - Brand Name/Model/Etc.)

CENTRAL High efficiency gas furnace.

THIS BLOCK FOR PSA USE ONLY

ASSIGNED TO:

DATE ASSIGNED:

ADDITIONAL INSTRUCTIONS: (Name/Organization Code)

Prion PSA was # 1442

Requested Date:

2/22/84

2-12-85

Miriam,

How long does it stay cold? As you know, the condition occurs only under severely cold conditions, and the blockage, being caused by ice, will persist as long as the ice doesn't melt. CO will continue to vent into the home once it begins, and will continue at a steady rate. Air exchange in the home will tend to draw off the CO at a steady rate also, depending upon the air-tightness of the house. A hazardous condition develops if CO enters the house faster than it vents out by air exchange.

Roy

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ID # 85-19  
RP # \_\_\_\_\_  
HEB # \_\_\_\_\_

PRODUCT SAFETY ASSESSMENT (PSA)  
TECHNICAL EVALUATION  
REQUEST

PSA USE ONLY

REQUEST # 1582

TIME/DATE RECEIVED 1:30 p.m. 4/24/85

REQUESTED BY:

Harry Hershman C.O.  
(Requestor's Name/Title - Please Print)

CACA 4/19/85 PRIORITY: B  
(Org. Code) (Date) (Corrective Actions Use Only)

RECEIVED BY: M. EVERHART / PM  
(Name/Title - Please Print)

DATE DUE: HS:  
ES:

TITLE OF EVALUATION REQUESTED (Please Print):

① Comment on firm's response to 2/15/85 memo by W.H. Porter, HSTL - any questions for firm? - HS  
② Any questions for firm concerning this memo, or any other requested information, such as complete information on each complaint the firm has received. - ES

PRODUCT IDENTIFICATION:

(Use Back of this form if more space is needed)

Lennox Indus. Inc.  
(Manufacturer/Importer)

(Sample Number - If Applicable)

Product: Lennox Pulse Gas Furnace  
(Other Descriptive Information - Brand Name/Model/Etc.)

THIS BLOCK FOR PSA USE ONLY

ASSIGNED TO: Barbara Jacobson/HS DATE ASSIGNED: \_\_\_\_\_  
(Name/Organization)

ADDITIONAL INSTRUCTIONS:

Requested Date:

• D. Kaplan to get T.O. Assigned HS  
Tom Cooper worked on this previously

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## Memorandum

TO : D. Thome, CA  
 THROUGH : Bert Simson *Bert Simson*  
 THROUGH : Andrew G. Ulsamer, Ph.D., HS *AGU*  
 FROM : Warren K. Porter, Act. Dir., HSPS *WKP*  
 SUBJECT : CPSC Id. 85-19, Lennox Pulse Air

12 JUN 1985

The letter from Mr. Harris dated March 26, 1985 provides little new information concerning the incidents of blockage of the flue and subsequent leakage of combustion gases into the indoor environment. The letter is unique from the standpoint of Mr. Harris taking statements, out of context, from my evaluation of the January 11, 1985 Lennox submission and making the most extreme inferences from those statements.

Based on data submitted by Lennox (January 11, 1985 letter) on furnace emissions and calculations made by Lennox, it was my conclusion that the incidents where adverse health effects would be observed would occur only in homes with low air exchange rates, i.e. normally those described as "tight" houses. I further pointed out that one would expect, based on several technical studies, that two to ten percent of the housing stock would be likely to experience air exchange rates of 0.25 or less per hour. Whether these would be "tight" houses from the type of construction used is open to question; however, the 2-10% estimate in Table 1 of my Feb. 15, 1985 memo to N. Marchika would be a natural consequence of random sampling. Mr. Harris continues quoting (p 2) "...the fact that large numbers of complaints...to become apparent or recognized and reported", is simply incorrect." Mr. Harris states that Lennox believes that all incidents that have occurred have been reported. I believe there are only two reasons an incident would be reported:

- 1) Partial or full flue blockage with continued furnace operation and illnesses or discomfort occurring because of CO exposure or,
- 2) Partial or full flue blockage resulting in shut down of the furnace.

A partial or full flue blockage with continued furnace operation and no symptoms occurring would be unlikely to be reported since the owner would have no idea that a malfunction had occurred. Mr. Harris concludes his second paragraph, "Lennox reasonably believes that all incidents that have occurred have been reported. In the same fashion, Mr. Porter's assumption that the reported "incidents occurred in the low filtration rate subset of the houses where Lennox furnaces were installed" is both incorrect and unsupported."

My assumption is based on both Lennox's data and their modeling which indicate a low infiltration condition is necessary to obtain CO concentrations high enough to cause symptoms to be observed. Unless Lennox has new data indicating high CO concentrations resulting in houses with infiltration rates of 0.3 per hour or greater, I believe my assumption is reasonable and supported by the Lennox data and modeling. As indicated above, houses with higher air exchange rates and a malfunctioning but operating furnace would not, on the basis of the Lennox data, be expected to result in symptoms being exhibited. Therefore, it is not unreasonable to expect that partial or total blockage of the flue could occur, could allow CO to escape to the living space, and in situations of high infiltration, not result in CO concentrations leading to symptoms. Although Lennox may not consider such situations as an incident, I cannot concur that such a condition is what would be considered a normal function of the furnace-flue system.

Mr. Harris cites data from my memo on occurrences of deaths from CO poisoning as not supporting hazard of death from a partial or fully plugged flue. Such anecdotal data, which I cited, is simply an indication of a few reported, confirmed CO poisonings. It provides guidelines as to known cases but cannot be used to define a population effect. NAS, in "Indoor Pollutants" (p. 351-353) comments on and supports the EPA standard of 9 ppm, 8 hour exposure or 35 ppm, one hour exposure as appropriate standards for protecting cardiac and peripheral vascular disease patients. These concentrations are reasonably expected based on Lennox's data and modeling.

Mr. Harris believes the low number (22) of incidents supports the Lennox conclusion that its dealer system is providing information on all exhaust blockage problems. This is speculative in that it does not provide a definition of a blockage problem and is irrelevant since it does not address the success in correcting the potential for future incidents of flue blockage.

Further, the symptoms and health effects discussed in reviews by Lennox and CPSC are for generally healthy individuals. The review by Spitzer and Womble (1983) indicates potential symptoms and EKG changes at exposures to 15 ppm CO after 5 - 8 hours and potential occurrences of death for severely compromised cardiac patients after 4 hours exposure to concentrations between 100 and 200 ppm. The NAS report, as stated above, supports control of CO concentrations to 9 ppm for 8 hours or 35 ppm for one hour as appropriate, for protection of people with cardio-vascular disease. Since the Lennox data projects concentrations between 4 and 48 ppm under "realistic" conditions and as high as 192 ppm for low air exchange population subsets, adverse health effects or symptoms cannot be discounted for some segments of the population.

In conclusion, I believe the data and modeling submitted by Lennox supports my analysis of potential occurrences of CO poisoning symptomatology.

# LENNOX Industries Inc.

## VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

### OWNER

### DEALER

Name Alvin Sudstrom  
Address 1819 Powers Ave.  
City Lewiston  
State Idaho Zip 83501

Name Inland Metals  
Address 695 5th St  
City Clarkston  
State Wa Zip 99403

Model Number: G14-Q3-60-2

Serial Number: 5882J06828

### INSTALLED

Date 12-11-86 By Inland Metals

Direct Labor Cost \$25.00

Dealer Signature Inland Metals  
T.N.

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

3535D 002347

# LENNOX Industries Inc.

## VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

### OWNER

### DEALER

Name Loma Smith  
Address 4551 780 W  
City Lehi  
State UTAH Zip 84043

Name Guthrie  
Address 815 700E  
City AMERICAN FORK  
State UTAH Zip 81003

Model Number: G14-Q3-60-2

Serial Number: 5882JG7475

### INSTALLED

Date Jan 10, 86 By Man

Direct Labor Cost 30.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

Ivan Jones Heating, Air cond. (July 1st 83)

94

3-53535D 002347

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Dr. Meyers  
Address 314 Wyatt Circle  
City Billings, MT  
State MT Zip 59102

DEALER

Name Midwest Heating & Cooling  
Address 320 N. 17th Street  
City Billings,  
State MT Zip 59102

Model Number: G14- 05-100

Serial Number: 5883F08637

INSTALLED

Date 9-20-83 By Midwest

Direct Labor Cost \$28.00

Dealer Signature Doug Anbarov

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name W.S. (Willy) Smith  
Address 221 HANAN  
City Boise  
State Ida Zip \_\_\_\_\_

DEALER

Name NORTHWEST Htg. & AIR COND. INC.  
Address 103 NORTH 22ND  
City BOISE IDAHO 83702  
State \_\_\_\_\_ Zip \_\_\_\_\_  
PHONE (208) 342-4741

Model Number: G14- 23-80-1

Serial Number: 5882H05469

INSTALLED

Date 2/15/86 By quinn

Direct Labor Cost 25.00

Dealer Signature Frank Marshall

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

95

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Dr. K. Yaguchi

Name Star Furnace & Sheet Metal Works

Address 1602 SW 4th Ave

Address 588 N. Oregon

City Ontario

City Ontario

State Oregon Zip 97914

State Oregon Zip 97914

Model Number: G14-03-100-2

Serial Number: 5883F00765

INSTALLED

Date 3/14/86 BY Star Furnace & Sheet Metal

Direct Labor Cost 25.<sup>00</sup>-

Dealer Signature Margaret L. Taylor Sr

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Boise Heating & Air Cond.

Name Boise Heating & Air Conditioning

Address 1401 W. Idaho

Address 1401 W. Idaho

City Boise

City Boise

State Idaho Zip 83702

State Idaho Zip 83702

Model Number: G14-Q3-60-1

Serial Number: 5882H06323

INSTALLED

Date 1-24-86 By Boise Heating & Air Conditioning

Direct Labor Cost \$20.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

96

53535D 002347

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Steve Wynn  
Address P.O. Box 126  
City Ketchum  
State Idaho Zip 83340

DEALER

Name Boise Heating & Air Cond. Inc.  
Address 1401 W. Idaho  
City Boise  
State Idaho Zip 83702

Model Number: G14-Q3-60-1

Serial Number: 5884H15940

INSTALLED

Date 0-31-84 By Boise Heating & Air Conditioning Inc.

Direct Labor Cost \$40.00

Dealer Signature *George R. Ray*

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER ALPINE SCHOOL District

DEALER

Name SPENCER II SCHOOL  
Address 200 No. 700 WEST  
City OREM  
State UTAH Zip 84057

Name SHEET METALS  
Address 6194 So. 300 WEST  
City MURRAY UT.  
State UTAH Zip 84107

Model Number: G14-Q3-40-1

Serial Number: 5884B 13612

INSTALLED

Date 14 May 86 By Dixon Greer

Direct Labor Cost \$30.00

Dealer Signature *Roy J. Greer*

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

D40150-5

**LENNOX** Industries Inc.

660304AA

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER Alpine School District  
Name Spencer School  
Address 200 No. 700 West  
City Orem  
State Utah Zip 84057

DEALER  
Name Sheet Metal Systems  
Address 6194 Wo. 300 West  
City Murray  
State Utah Zip 84107

Model Number: G14- Q3 40-1

Serial Number: 5884 B 13800

INSTALLED

Date 14 May 86 By Dixon Greer

Direct Labor Cost 30.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

D40150-5

**LENNOX** Industries Inc.

660304AA

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER Alpine School District  
Name Spencer School  
Address 200 No. 700 West  
City Orem  
State Utah Zip 84057

DEALER  
Name Sheet Metal System  
Address 6194 So. 300 West  
City Murray  
State Utah Zip 84107

Model Number: G14- Q3 - 40 - 2

Serial Number: 5884 B 14484

INSTALLED

Date 14 May 86 By Dixon Greer

Direct Labor Cost 30.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

98

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name THOMAS DURRETT  
Address 206 CLAWSON  
City YAKIMA  
State WA 5 H zip 98902

Name JOHNSON MECHANICAL  
Address 909 N 18<sup>th</sup> AVE  
City YAKIMA  
State WA 5 H zip 98902

Model Number: G14-Q3-60-1

Serial Number: 5883001568

INSTALLED

Date 12/28/84 By WCS STRICKLEY

Direct Labor Cost 32.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

I-53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name OTIS GOODE  
Address 202 S. 60<sup>th</sup> AVE  
City YAKIMA  
State WA 5 H zip 98902

Name JOHNSON MECHANICAL  
Address 909 N 18<sup>th</sup> AVE  
City YAKIMA  
State WA 5 H zip 98902

Model Number: G14-Q3-80-2

Serial Number: 5882400244

INSTALLED

Date 12/28/84 By WCS STRICKLEY

Direct Labor Cost 32.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

99

53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name MARION BLANK  
Address 1123 S. 30<sup>th</sup> AVE  
City YAKIMA  
State WASH zip 98902

Name Johnson Mechanical  
Address 909 W. 18<sup>th</sup> AVE  
City Yakima  
State WASH zip 98902

Model Number: G14- Q3-80-2

Serial Number: 5883 L10237

INSTALLED

Date 12/28/84 By Wes Stuckney

Direct Labor Cost 32<sup>00</sup>

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name DENNIS HASSLINGER  
Address 610 S. 24<sup>th</sup> AVE  
City YAKIMA  
State WASH zip 98902

Name Johnson Mechanical  
Address 909 N 18<sup>th</sup> AVE.  
City YAKIMA  
State WASH zip 98902

Model Number: G14- Q3-80-2

Serial Number: 5883 L16509

INSTALLED

Date 12/28/84 By Wes Stuckney

Direct Labor Cost 32<sup>00</sup>

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

100

53535D 002347

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name ALAN McDONALD  
Address 5304 Richey Road  
City YAKIMA  
State WASH Zip 98902

Name JOHNSON MECHANICAL  
Address 909 N 18<sup>th</sup> AVE  
City YAKIMA  
State WASH Zip 98902

Model Number: G14- QA-80-2

Serial Number: 5884 B05236

INSTALLED

Date 12/28/84 By WCS STICKNEY

Direct Labor Cost 32<sup>00</sup>

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name MARVIN McGill  
Address 919 Adamsview  
City YAKIMA  
State WASH Zip 98902

Name JOHNSON MECHANICAL  
Address 909 W. 18<sup>th</sup> AVE  
City YAKIMA  
State WASH Zip 98902

Model Number: G14- Q3-60-1

Serial Number: 5882M07237

INSTALLED

Date 12/28/84 By WCS STICKNEY

Direct Labor Cost 32<sup>00</sup>

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

101

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name ANDY HERNANDEZ  
Address 1409 ROOSEVELT  
City YAKIMA  
State WASH zip 98902

Name Johnson Mechanical  
Address 909 N 18<sup>th</sup> AVE  
City Yakima  
State WASH zip 98902

Model Number: G14- Q3-40-1 Serial Number: 5883D10210

INSTALLED

Date 1/2/85 By WES STICKNEY

Direct Labor Cost 32<sup>00</sup>

Dealer Signature 

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

3535D 002347

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name BARBARA HALDEZT  
Address 806 S. 5<sup>th</sup> AVE  
City YAKIMA  
State WASH zip 98902

Name Johnson Mechanical  
Address 909 North 18<sup>th</sup> AVE  
City Yakima  
State WASH zip 98902

Model Number: G14- Q3-40-2 Serial Number: 5882K03521

INSTALLED

Date 12/27/84 By WES STICKNEY

Direct Labor Cost 32<sup>00</sup>

Dealer Signature 

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

102

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name HARRY KOHL  
Address 212 N. 25<sup>th</sup> AVE  
City YAKIMA  
State WASH zip 98902

DEALER

Name JOHNSON MECHANICAL  
Address 909 N 18<sup>th</sup> AVE  
City YAKIMA  
State WASH zip 98902

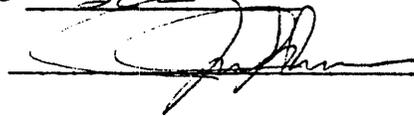
Model Number: G14-QA-60-1

Serial Number: 5883 H01409

INSTALLED

Date 1/2/85 By Wes Stickey

Direct Labor Cost 32<sup>00</sup>

Dealer Signature 

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

LB-53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name RICH SHROYER  
Address 1208 JEFFERSON  
City YAKIMA  
State WASH zip 98902

DEALER

Name JOHNSON MECHANICAL  
Address 909 N 18<sup>th</sup> AVE  
City YAKIMA  
State WASH zip 98902

Model Number: G14-Q3-40-1

Serial Number: 5883 D10209

INSTALLED

Date 1/16/85 By Wes Stickey

Direct Labor Cost 32<sup>00</sup>

Dealer Signature 

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

103

LB-53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Lester Meiners  
Address 2080 Lark Drive  
City Walla Walla  
State WA zip 99362

Name ~~Grassi~~ Grassi Refrigeration  
Address 1445 W. Rose  
City Walla Walla  
State WA zip 99362

Model Number: G14-Q3-60

Serial Number: 5882207198

INSTALLED

Date 4/24/85 By Grassi - Johnny Goyz  
Direct Labor Cost 3400  
Dealer Signature Cheryl L Bloom

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Gus Hartzjem  
Address 6616 Pearson  
City Walla Walla  
State WA zip 99362

Name Grassi Refrigeration  
Address 1445 W. Rose  
City Walla Walla  
State WA zip 99362

Model Number: G14-Q380

Serial Number: 5883015524

INSTALLED

Date 4/25/85 By Johnny Goyz  
Direct Labor Cost 3400  
Dealer Signature Cheryl L Bloom

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

3535D 002347

104

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Alvin Wahl  
Address 117 E. Maple  
City Walla Walla  
State WA zip 99362

Name Grassi Refrigeration  
Address 1445 W. Rebel  
City Walla Walla  
State WA zip 99362

Model Number: G14-14030-60

Serial Number: 5882 M07364

INSTALLED

Date 4/24/85 By Johnny Doff

Direct Labor Cost 3400

Dealer Signature Cheryl L Bloom

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Jess Strohmaier  
Address 101830 Lubek  
City Walla Walla  
State WA zip 99362

Name Grassi Refrig.  
Address 1445 W. Rebel  
City Walla Walla  
State WA zip 99362

Model Number: G14-Q3-80

Serial Number: 5882 M08098

INSTALLED

Date 4/25/85 By Johnny Doff

Direct Labor Cost 3400

Dealer Signature Cheryl L Bloom

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Richard Divine  
Address 108 S.E. 3rd  
City College Place  
State WA zip 99324

Name Grassi Refrigeration  
Address 1445 W. Rose  
City Walla Walla  
State WA zip 99362

Model Number: G14-Q4-80

Serial Number: 5882M 08091

INSTALLED

Date 4/25/85 By Johnny Goff

Direct Labor Cost 3400

Dealer Signature Cheryl L. Bloom

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Joe Alexander  
Address 802 N. Main  
City Walla Walla  
State WA zip 99362

Name Grassi Refrigeration  
Address 1445 W. Rose  
City Walla Walla  
State WA zip 99362

Model Number: G14-Q3 80

Serial Number: 5883C 15640

INSTALLED

Date 4-23-85 By Johnny Goff

Direct Labor Cost 3400

Dealer Signature Cheryl L. Bloom

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

3535D 002347

106

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name White Brothers  
Address 304 Mullan  
City Walla Walla  
State WA zip 99362

Name Grassi Refrigeration  
Address 1445 W. Rose  
City Walla Walla  
State WA zip 99362

Model Number: G14-Q3-60

Serial Number: 5882 H03998

INSTALLED

Date 4-23-85 By Johnny Goff

Direct Labor Cost 3400

Dealer Signature Cheryl K. Bloom

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Arnold Ewonuk  
Address Grassi Refug Shop  
1445 W. Rose  
City Walla Walla  
State WA zip 99362

Name Grassi Refrigeration  
Address 1445 W. Rose  
City Walla Walla  
State WA zip 99362

Model Number: G14-Q4-60

Serial Number: 5884 B13423

INSTALLED

Date 4/23/85 By Johnny Goff

Direct Labor Cost 3400

Dealer Signature Cheryl K. Bloom

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

53535D 002347

107

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Dean Martin  
Address 540 12th St  
City Elko NV  
State Nevada Zip 89801

DEALER

Name Penrod Plumbing  
Address 255 11th St  
City Elko Nevada  
State Nevada Zip 89801

Model Number: G14- Q3-80-2

Serial Number: 5883M-15830

INSTALLED

Date 2/22/84 By Dean Becker  
Direct Labor Cost ~~1776~~ #2500 adj to 30%  
Dealer Signature Robert L Penrod

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Mrs C.A. Sewell  
Address 949-Court  
City Elko  
State Nevada zip 89801

DEALER

Name Penrod's Plumbing Heating & A.C.  
Address 255-11th St  
City Elko  
State NEVADA zip 89801

Model Number: G14- Q3-80-2

Serial Number: 5883012582

INSTALLED

Date 3-26-85 BY D.C. Becker  
Direct Labor Cost #2500 adj to 30%  
Dealer Signature Robert L. Penrod

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Mrs. C.A. Sewell  
Address 949-Court  
City ELKO  
State NEVADA zip 89801

DEALER

Name Penrod Plumbing, Heating & A.C.  
Address 255-11<sup>th</sup> ST.  
City ELKO  
State NEVADA zip 89801

Model Number: G14-Q3-80-2 Serial Number: 5883D12578

INSTALLED

Date 3-26-85 BY D.C. Becker  
Direct Labor Cost \$ 25.00 adj to 30<sup>00</sup>  
Dealer Signature Robert L. Penrod

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Penrod's Plumbing Heating  
Address 255-11<sup>th</sup> ST.  
City ELKO  
State NEVADA zip 89801

DEALER

Name Penrod's Plumbing Heating & AC  
Address 255-11<sup>th</sup> ST.  
City ELKO,  
State NEVADA zip 89801

Model Number: G14-Q3-60-1 Serial Number: 5882C11112

INSTALLED

Date 2-22-85 BY DEAN BECKER  
Direct Labor Cost \$ 25.00 adj to 30<sup>00</sup>  
Dealer Signature Robert L. Penrod

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

109

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name West Park Baptist Church  
Address 715 W. Tamarack  
City HERMISTON  
State Oregon Zip 97838

Name Mull Tin Shop  
Address 290 W. Marie  
City HERMISTON  
State Ore Zip 97838

Model Number: G14- \_\_\_\_\_

Serial Number: \_\_\_\_\_

INSTALLED

Date 7-9-84 By Mull Tin Shop Inc

Direct Labor Cost 32<sup>00</sup>

Dealer Signature Jimmie D. Mull

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

NOTE NOTE

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Church of God  
Address Diagonal Rd.  
City HERMISTON  
State Ore Zip 97838

Name Mull Tin Shop Inc  
Address 290 W. Marie  
City HERMISTON  
State Ore Zip 97838

Model Number: G14-05-130  
05-130

Serial Number: \_\_\_\_\_

INSTALLED

Date 12-30-84 By Mull Tin Shop

Direct Labor Cost 32<sup>00</sup> x 2 = 64<sup>00</sup>

Dealer Signature Jimmie D. Mull

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

110

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Mull Tin Shop  
Address 290 W Marie  
City HERMISTON  
State Ore Zip 97838

DEALER

Name MULL TIN SHOP  
Address 290 W Marie  
City HERMISTON  
State Ore Zip 97838

Model Number: G14-Q3-80-2

Serial Number: 5884B10479  
Stock

INSTALLED

Date Stock By Mull Tin Shop

Direct Labor Cost 32<sup>00</sup>

Dealer Signature Jewell D Mull

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Mull Tin Shop  
Address 290 W Marie  
City HERMISTON  
State Ore Zip 97838

DEALER

Name Mull Tin Shop  
Address 290 W Marie  
City HERMISTON  
State Ore Zip 97838

Model Number: G14-Q3-80-2

Serial Number: 5873C14-009

INSTALLED

Date Stock By Mull Tin Shop

Direct Labor Cost 32<sup>00</sup>

Dealer Signature Jewell D Mull

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

111

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Cleo Booth

Name Mull Tin Shop

Address 609 E Main

Address 290 W Marie

City Hermiston

City Hermiston

State Ore zip 97838

State Ore zip 97838

Model Number: G14-Q3-60

Serial Number: 5884612227

INSTALLED

Date 2-28-85 By Mull Tin Shop Inc

Direct Labor Cost 32<sup>00</sup>

Dealer Signature Jimmie A Mull

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

NOTE → (3)

OWNER

DEALER

Name Catholic Church

Name Mull Tin Shop Inc

Address 565 W Hermiston Ave

Address 290 W Marie

City HERMISTON

City HERMISTON

State Ore zip 97838

State Oregon zip 97838

Model Number: G14-Q4-80-2  
Q5-130-5

Serial Number: 5883018918  
5883C04184

INSTALLED

Date 11-3-83 BY Mull Tin Shop Inc

Direct Labor Cost 32<sup>00</sup> X 3 = 96<sup>00</sup>

Dealer Signature Jimmie A Mull

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

112

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Bob Hirsh  
Address 1103 Gilliom  
City Pendleton  
State Ore Zip 97801

DEALER

Name Mull TIN Shop  
Address 290 W. Marie  
City HERMISTON Ore  
State \_\_\_\_\_ Zip 97838

Model Number: G14-Q3-80-1

Serial Number: 5882T12487

INSTALLED

Date 5-17-83 By Mull TIN Shop INC

Direct Labor Cost 32<sup>00</sup>

Dealer Signature Jewell D. Mull

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

53535D 002347

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Gerald Mc Bee  
Address 745 E Pine  
City HERMISTON  
State Ore Zip 97838

DEALER

Name Mull TIN SHOP  
Address 290 W Marie  
City HERMISTON  
State Ore Zip 97838

Model Number: G14-Q4-80-2

Serial Number: 5884B05237

INSTALLED

Date 10-17-84 By Mull TIN SHOP INC

Direct Labor Cost 32<sup>00</sup>

Dealer Signature Jewell D. Mull

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

113

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Harmon Spruiger  
Address 876 E Highland  
City HERMISTON  
State Ore zip 97838

Name Mull Tin Shop Inc  
Address 290 W. Marie Ave  
City HERMISTON  
State Ore zip 97838

Model Number: G14-Q3-80-1

Serial Number: 5882H05131

INSTALLED

Date 10-26-83 BY Mull Tin Shop Inc

Direct Labor Cost 36<sup>00</sup>

Dealer Signature Jimmie D. Mull

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

3535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Carol Innes  
Address 522 NW 8th  
City Hermiston Ore  
State \_\_\_\_\_ zip 97801

Name Mull Tin Shop  
Address 290 W. Marie  
City HERMISTON  
State Ore zip 97838

Model Number: G14-Q5-130-2

Serial Number: 5884A05067

INSTALLED

Date 2-3-1984 BY Mull Tin Shop Inc

Direct Labor Cost 32<sup>00</sup>

Dealer Signature Jimmie D. Mull

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

3535D 002347

114

**LENNOX** Industries Inc.

VERIFICATION OF G14 WDW WEATHER KIT INSTALLATION

OWNER

DEALER

Name Alford Hoffman

Name Inland Metals

Address 835 Dearbourn

Address 635 5th St

City Oakstam

City Oakstam

State Fla. Zip 99403

State Fla. Zip 99403

Model Number: G14-Q4-80

Serial Number: 5884B11053

INSTALLED

Date 3-20-85 By Inland Metals

Direct Labor Cost \$31.00

Dealer Signature \_\_\_\_\_

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

53535D 002347

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Starling Savings

Name Inland Metals

Address 303 Diagonal

Address 635 5th St.

City Oakstam

City Oakstam

State Fla. Zip 99403

State Fla. Zip 99403

Model Number: G14-Q3-100-2

Serial Number: 5883K15526

INSTALLED

Date 3-15-85 By Inland Metals

Direct Labor Cost \$30.00

Dealer Signature D. Daniel

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

115

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Eugene Ellis

Name Boise Htg & Air Cond Inc

Address 3650 Holcomb

Address 1401 West Idaho

City Boise

City Boise

State Idaho Zip 83706

State Idaho Zip 83702

Model Number: G14- 03-80-2

Serial Number: 5882K07759

INSTALLED

Date 12-31-83

By Boise Htg & Air Cond Inc

Direct Labor Cost \$35.00

Dealer Signature George K. Taylor

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Dr. Budmundson & Hulme

Name Boise Heating & Air Cond. Inc.

Address 121 E. Fort

Address 1401 West Idaho

City Boise

City Boise

State Idaho Zip 83702

State Idaho Zip 83702

Model Number: G14- 03-40-2

Serial Number: 5883E07130

INSTALLED

Date 6-30-83

By Boise Htg & Air Cond Inc

Direct Labor Cost \$40.00

Dealer Signature George K. Taylor

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

116

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Hal Davis  
Address 5619 Lubkin  
City Boise  
State Idaho Zip 83706

DEALER

Name Boise Htg & AirCond Inc  
Address 1401 West Idaho  
City Boise  
State Idaho Zip 83702

Model Number: G14-123-80

Serial Number: 5882J00258

INSTALLED

Date 9-31-83 By Boise Htg & Air Cond Inc

Direct Labor Cost \$35.00

Dealer Signature George R. Taylor

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Seb Arriaga  
Address 2904 Selkirk Ct  
City Boise  
State Idaho Zip 83702

DEALER

Name Boise Htg & Air Cond Inc  
Address 1401 West Idaho  
City Boise  
State Idaho Zip 83702

Model Number: G14-04-80-2

Serial Number: 5884H01287

INSTALLED

Date 10-3-84 By Boise Htg & AirCond Inc

Direct Labor Cost \$35.00

Dealer Signature George R. Taylor

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

117

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Alan Grant

Name Don Beaver AC & HT

Address 321 E Kent

Address 2324 1/2 McDonald

City Missoula

City Missoula

State MT zip 59801

State Montana zip 59801

Model Number: G14- Q3-60-1

Serial Number: 5882K03215

INSTALLED

Date 3-14-85 By Kevin Domes (BA/CA/HT)

Direct Labor Cost \$30.00

Dealer Signature Don Beaver

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

3535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Henningsen C.K.

Name Beaver AC & HT

Address 1800 Ronald Ave

Address 2324 1/2 McDonald

City Missoula

City Missoula

State Mont. zip 59801

State Montana zip 59801

Model Number: G14- Q4-80-2

Serial Number: 5883A11280

INSTALLED

Date MARCH 15-85 By KEVIN BEAVER AIR COND & HEATING

Direct Labor Cost \$30.00

Dealer Signature Don Beaver

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

002347

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SEP 17 ENT'D VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

58

OWNER

Name JERRY EIDEM  
Address 7423 PAMELA PLACE APT #1  
City ANCHORAGE  
State ALASKA Zip 99504

DEALER

Name MOORE MECHANICAL, INC.  
Address 5001 Eagle STREET  
City ANCHORAGE  
State ALASKA Zip 99503

Model Number: G14-Q3-80

Serial Number: 5882K09895

INSTALLED

Date 12/14/83 By ERIK HENDERICKSON

Direct Labor Cost \$ 35.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name JERRY EIDEM  
Address 7423 PAMELA PLACE  
City ANCHORAGE  
State ALASKA Zip 99504

SEP 17 ENT'D DEALER

Name MOORE MECHANICAL  
Address 5001 Eagle STREET  
City ANCHORAGE  
State ALASKA Zip 99503

Model Number: G14-Q3-80

Serial Number: 5883C15607

INSTALLED

Date 12/14/83 By ERIK HENDERICKSON / Moore Mechanical

Direct Labor Cost \$ 35.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

119

SEP 17 7 ENT'D  
VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name JERRY FIDEM  
Address 7423 PAMELA PLACE  
City ANCHORAGE  
State ALASKA Zip 99504

DEALER

Name MOORE MECHANICAL  
Address 5001 Eagle Street  
City ANCHORAGE, ALASKA  
State Alaska Zip 99503

Model Number: G14- Q3-80

Serial Number: 5883C15608

INSTALLED

Date 12/14/83 By ERIK HENDERICKSON/MOORE MECH

Direct Labor Cost \$35.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name JERRY FIDEM  
Address 7423 PAMELA PLACE APT #1  
City ANCHORAGE  
State ALASKA Zip 99504

DEALER 17 ENT'D

Name MOORE MECHANICAL  
Address 5001 Eagle STREET  
City ANCHORAGE  
State ALASKA Zip 99503

Model Number: G14- Q3-80

Serial Number: 588 2M10616

INSTALLED

Date 12/14/83 By ERIK HENDERICKSON/MOORE MECH

Direct Labor Cost \$35.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

SEP 26 ENTJ

OWNER

Name C.F. NECRASON  
Address 2094 ESQUIRE DR.  
City ANCHORAGE  
State ALASKA Zip 99503

DEALER

Name Moore Mech  
Address 5001 Eagle  
City Anchorage  
State Alaska Zip \_\_\_\_\_

Model Number: G14-Q3-80-2

Serial Number: 5882 K09 884

INSTALLED

Date 9-19-84 By Moore Mechanical

Direct Labor Cost 52.50

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Moore Mechanical  
Address 5001 Eagle st  
City Anchorage  
State AK Zip 99503

DEALER

Name Moore Mechanical  
Address 5001 Eagle st  
City Anchorage  
State AK Zip 99503

SEP 24 ENTJ

Model Number: G14-Q3-60-1

Serial Number: 5882 H0 6486

INSTALLED

Date 9-20-84 By Jeffery P. Bunk

Direct Labor Cost ~~35.00~~ 70.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Mike McCormick  
Address SR Box 2301  
City Eagle River  
State Alaska Zip 99577

DEALER

Name Moore Mechanical, Inc.  
Address 5001 Eagle Street  
City Anchorage  
State Alaska Zip 99503

Model Number: G14- Q3-80-2

Serial Number: 5882K09894

INSTALLED

Date 6/83 By Moore Mechanical, Inc.

Direct Labor Cost 105.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Tom Sexton  
Address 2211 Shore Dr.  
City Anchorage  
State AK Zip 99515

DEALER

Name Moore Mechanical  
Address 5001 Eagle St  
City Anchorage  
State AK Zip 99503

Model Number: G14- Q3-80-1

Serial Number: 5882M10618

INSTALLED

Date 9-14-84 By Geoffrey P. Barker - Moore Mechanical, Inc.

Direct Labor Cost 52.50

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name LOUIE GASTOLECUTO

Name C. B. BROWN CO

Address 244 W 2ND

Address 221 BRIDGE ST.

City WINNEMUCCA

City WINNEMUCCA

State NEVADA zip 89445

State NEVADA zip 89445

Model Number: G14-03-80-2

Serial Number: 5883013261

INSTALLED

Date 3/20/85 By C. B. BROWN CO.

Direct Labor Cost 35.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

ISD 002347

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name BRAD SANTUCCI

Name C.B. BROWN CO

Address 6860 W. ROSE CREEK RD.

Address 221 S BRIDGE ST.

City WINNEMUCCA

City WINNEMUCCA

State NEVADA zip 89445

State NEVADA zip 89445

Model Number: G14-03-80-2

Serial Number: 5883D11569

INSTALLED

Date 2/11/85 By C. B. BROWN CO.

Direct Labor Cost 35.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

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VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Merlyn Runestad  
Address 3840 Runestad Cir.  
City Anchorage  
State AK Zip 99515

DEALER

Name Moore Mechanical  
Address 5001 Eagle St.  
City Anchorage  
State AK Zip 99503

Model Number: G14- 03801

Serial Number: 5882E04562

INSTALLED

Date 9-13-84 By Jeffrey P. Banks, Moore Mechanical

Direct Labor Cost 52.50

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy from dealer file.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Robert S. James  
Address P.O. Box 5-552  
City Port Richardson  
State Alaska Zip 99505

DEALER

Name Moore Mechanical, Inc.  
Address 5001 Eagle Street  
City ~~WHISKY~~ Anchorage  
State Alaska Zip 99504

Model Number: G14- 03-80-2

Serial Number: 5884B10994

INSTALLED

Date 4-17-85 By Clayton Schiller

Direct Labor Cost 1 1/2 hrs. @ \$57 per hr.

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name D. LYONS  
Address 1231 Pacific Ave  
City Salt Lake City UT  
State Utah Zip \_\_\_\_\_

DEALER

Name John Larsen  
Address 2891 So 1200 East  
City S.L.C.  
State Utah Zip 84106

Model Number: G14- Q3-40-2 Serial Number: 5889814403

INSTALLED

Date 1/25/86 By John Larsen  
Direct Labor Cost 735.00  
Dealer Signature John Larsen

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

5D 002347

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Ruby Hagadone  
Address Box 24  
City Poplar, MT 59255  
State Montana Zip 59255

DEALER

Name Simensen Plumbing & Heating Inc.  
Address 420 Highway 2  
City Wolf Point, MT 59201  
State Montana Zip 59201

Model Number: G14- ~~XXXXXXXX~~ Q3-60-2 Serial Number: PL605 8232

INSTALLED

Date 11-26-85 By Simensen Plumbing & Heating Inc.  
Direct Labor Cost 84.00  
Dealer Signature Cheryl Jensen, Comptroller

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

88 125

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Don Banyard  
Address 1103 Meadowbrook  
City Pocatello  
State Idaho zip 83201

DEALER

Name Vogts  
Address Box 666  
City Pocatello  
State Idaho zip 83201

Model Number: G14- Q3-80

Serial Number: 5882F03588

INSTALLED

Date 8-20-85 By Vogts Inc

Direct Labor Cost 25.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

5D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Ray Law  
Address 1007 E. Holliday  
City Pocatello  
State Idaho zip 83201

DEALER

Name Vogts  
Address Box 666  
City Pocatello  
State Idaho zip 83201

Model Number: G14- Q3-80-1

Serial Number: 5882604988

INSTALLED

Date 8-20-85 By Vogts Inc

Direct Labor Cost 25.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

5D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Francina Pond  
Address 220 S. 2<sup>nd</sup> West  
City Pocatello  
State Idaho zip 83201

DEALER

Name Vogts  
Address Box 666  
City Pocatello  
State Idaho zip 83201

Model Number: G14-Q4-80-2

Serial Number: 5884B15106

INSTALLED

Date 8-20-85 BY Vogts Inc

Direct Labor Cost 25.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

53535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Robert Hunt  
Address 157 Fullerway  
City Pocatello  
State Idaho zip 83201

DEALER

Name Vogts  
Address Box 666  
City Pocatello  
State Idaho zip 83201

Model Number: G14-Q3-60-2

Serial Number: 5882 H04142

INSTALLED

Date 8-20-85 BY Vogts Inc

Direct Labor Cost 25.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

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53536D 002347

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Arnold Luebbe

Name Vogts Inc

Address 1318 East Alameda

Address Box 666

City Pocatello

City Pocatello

State ID zip 83204

State ID zip 83204

Model Number: G14- Q3-60-1

Serial Number: 5883C11954

INSTALLED

Date 10-19-85 By Vogts Inc

Direct Labor Cost 25.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

35D 002347

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Larry Allsberry

Name Vogts

Address 1041 E. Sublette

Address Box 666

City Pocatello

City Pocatello

State Idaho zip 83201

State Idaho zip 83201

Model Number: G14- Q3-60-1

Serial Number: 5882H04139

INSTALLED

Date 8-20-85 By Vogts Inc

Direct Labor Cost 25.00

Dealer Signature [Signature]

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

002347

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VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name GOSHEN LDS Church

Name SARGENT MECH

Address \_\_\_\_\_

Address P.O. Box 957

City GOSHEN

City Idaho Falls

State Id. Zip 83234

State Id. Zip 83401

Model Number: G14-Q460-1

Serial Number: 5883H01427

INSTALLED

Date 8 Oct 85 By SARGENT MECH

Direct Labor Cost 2500

Dealer Signature \_\_\_\_\_

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

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**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Peoples Savings & Loan

Name Sunshine Htg

Address 1601 Adams Ave

Address Rt 1 Box 108 Glen Rd

City LA GRANDE

City Summerville

State OR Zip 97850

State OR Zip 97876

Model Number: G14-Q480-1

Serial Number: 5882M07865

INSTALLED

Date Oct 23 85 BY JACK HANSEN (Lennox)

Direct Labor Cost 0

Dealer Signature \_\_\_\_\_

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Carlton Darling  
Address Enclave #1  
City Park City  
State ut. Zip 84060

DEALER

more.  
Name Bingham Htg.  
Address 3760 W. 3100 So.  
City O W. Valley  
State ut. Zip \_\_\_\_\_

Model Number: G14- Q3-60-1 Serial Number: 5883D07083

INSTALLED

Date 3-85 BY Curtis Toles  
Direct Labor Cost 30#  
Dealer Signature Marc Bingham

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

35D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

Name Harrigan Michael  
Address 4588 Jupiter Dr.  
City S.L.  
State ut Zip 84117

DEALER

Name Bingham Heating  
Address 3760 W 3100 So  
City WVC  
State Ut Zip 84120

Model Number: G14- Q4-80-2 Serial Number: 5883D18235

INSTALLED

Date 3-85 BY Steve Halson  
Direct Labor Cost 30#  
Dealer Signature Marc Bingham

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

35D 002347

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**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name Lame Deer Emergency Medical Center

Name Holmes Plng & Htg.

Address \_\_\_\_\_

Address 202 N. CUSTER

City LAME DEER

City HARDIN

State MONTANA Zip 59043

State MONTANA Zip 59034

Model Number: G14-Q4-80-2

Serial Number: 5884B05270

INSTALLED

Date 11-13-84 BY Joe Burroughs

Direct Labor Cost 35<sup>00</sup> - mileage 56 miles one-way

Dealer Signature William M Wagner

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

1535D 002347

**LENNOX** Industries Inc.

VERIFICATION OF G14 COLD WEATHER KIT INSTALLATION

OWNER

DEALER

Name KEOPH Ranch

Name Holmes Plng & Htg.

Address \_\_\_\_\_

Address 202 N. CUSTER

City HARDIN

City HARDIN

State MONTANA Zip 59034

State MONTANA Zip 59034

Model Number: G14-Q3-40-2

Serial Number: 5883E07191

INSTALLED

Date 11/20/85 BY GARY TAURMAN

Direct Labor Cost 35<sup>00</sup> - mileage 38 miles one-way

Dealer Signature William M Wagner

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

35D 002347

131

VERIFICATION OF G14 GOLD WEATHER KIT INSTALLATION

*B. J. R. 8-26-88 J. R. K. L. J. P. 1992*  
*Edmund Division*

OWNER

DEALER

Name \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Model Number: G14- \_\_\_\_\_

Serial Number: \_\_\_\_\_

INSTALLED

Date \_\_\_\_\_ By \_\_\_\_\_

Direct Labor Cost \_\_\_\_\_

Dealer Signature \_\_\_\_\_

Original and 2nd copy must be returned to Division Service Manager; 3rd copy for dealer file.

Lennox

LH

FIELD ACTIVITY COVERSHEET

1. REGION/STATE  SWRO/Tx	2. OPERATION (Check One) <input checked="" type="checkbox"/> Inspection <input type="checkbox"/> Establishment Visit <input type="checkbox"/> Telephone Contact <input type="checkbox"/> Investigation <input type="checkbox"/> Other _____	3. DATE 1/8 & 1/20/87
		4. NUMBER (For RO Use)

5. ESTABLISHMENT  
 Name Lennox Industries Inc.  
 Address 7920 Belt Line Rd  
 City Dallas, State Texas Zip 75380 Telephone No. 980-6000

6. RELATED FIRM       Parent       Headquarters       Subsidiary       Other factory  
 Name Lennox City Marshalltown State Iowa

7. PRODUCTS COVERED <u>Furnaces</u>	8. OTHER CONSUMER PRODUCTS <u>Air conditioners and humidifiers</u>
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9. ESTABLISHMENT TYPE <input checked="" type="checkbox"/> Manufacturer <input type="checkbox"/> Importer <input type="checkbox"/> Wholesaler <input type="checkbox"/> Own Label Distributor <input type="checkbox"/> Retailer <input type="checkbox"/> Repackager <input type="checkbox"/> Other _____	10. ANNUAL PRODUCTION Products Covered \$ <u>Proprietary</u> Units _____ Other Products \$ _____ Units _____ \$300 million plus
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11. I.S. BUSINESS % Received <u>proprietary</u> % Shipped _____	12. SAMPLES COLLECTED None	13. MIS CODE 32626	14. HOURS Activity <u>12½</u> Travel <u>2½</u>
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15. REASON FOR ACTIVITY (Assignment Reference) This inspection was requested by STI 87-033. It was conducted in accordance with written & verbal instructions received from CACA.

16. EMPLOYEE'S NAME ZEW	TITLE Investigator	SIGNATURE <i>Zarnio E Weaver</i>
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17.  ENDORSEMENT       REMARKS       SUMMARY       OTHER \_\_\_\_\_

ENDORSEMENT ATTACHED

18. REVIEWER'S NAME G. Brent Bradford	TITLE Supervisory Investigator	SIGNATURE <i>G. Brent Bradford</i>
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19. REVIEW DATE 1-26-87	DISTRIBUTION o: SWRO Compliance cc: SWRO File, CACA
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Lennox Industries Inc.  
Dallas, Texas

ENDORSEMENT:

CACA requested this Section 15 inspection under STI 87-033. The purpose of the inspection was to determine if firm has any hazardous problems with the high-efficiency furnaces they manufacture. CPSC is currently involved in a Section 15 CAP with this firm's G 14, Pulse high efficiency furnace. This inspection was to concentrate on this firm's other high efficiency furnaces.

Inspection revealed firm manufactures only one high efficiency furnace and that is the G 14 Pulse. Firm claimed not to be aware of any complaints or injuries which would indicate a Section 15 hazard with any of the furnaces they manufacture. They stated that they also did not believe the Section 15 CAP involving their G 14 Pulse was a substantial product hazard. The problem with the G 14 Pulse was vents were freezing in severe weather conditions.

Management refused access to consumer complaint files and other information requested during this inspection.

F/U: Refer to SWRO Compliance and CACA.