LA-UR-24-23912

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Title:	Los Alamos National Laboratory (AI856) - Notice of Intent for Replacement Boilers at TA-53-0365
Author(s):	Mahoney, Katelyn Rose
Intended for:	Environmental Regulatory Document
Issued:	2024-09-04 (rev.1)

Los Alamos
NATIONAL LABORATORY
Environmental Protection & Compliance Division
Compliance Programs Group

Los Alamos National Laboratory
P.O. Box 1663, MS K490
Los Alamos, NM 87545
505-667-0666

Symbol: EPC-DO: 24-115
LAUR: 24-23912
Locates: N/A
Date: May 28, 2024

Mr. Jim Nellessen, Ph.D.
Permit Program Manager
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez**,** Suite 1
Santa Fe, NM 87505-1816

Subject: Los Alamos National Laboratory (AI856) - Notice of Intent for Replacement Boilers at TA-53-0365

Dear Mr. Nellessen:

In accordance with the requirements of 20.2.73 NMAC Section 200.A.1 Notice of Intent, Los Alamos National Laboratory (LANL) is providing notification of intent to replace two existing Title V permitted boilers, TA-53-365-BHW-1 and TA-53-365-BHW-2, with two equivalent replacement low NOx boilers, TA-53-365-BHW-1B and TA-53-365-BHW-2B. The required Notice of Intent forms are included as Attachment 1.

The original boilers are permitted in Title V Permit P100-R2M5 and each have a maximum heat input rating of 8.37 MMBtu/hr with no low NOX controls. They are hot water boilers for Technical Area 53 Building 365 (TA-53-0365) industrial hot water distribution system for heating systems associated with multiple building air handling units. LANL is in the process of replacing the two original boilers with two new equivalent replacement boilers with low NOX controls. The original and new boilers are the same make and model, Sellers S-Series natural gas fired hot water boilers with a maximum heat input of 8.37 MMBtu/hr. The original Sellers boilers were constructed in 1988 and due to age, there is a decreased efficiency and higher emissions due to no NOx controls. TA-53 is voluntarily planning to reduce air pollution by replacing the original boilers with low NOx boilers. There will be no change in the existing process after installation of the replacement boilers.

Estimated emissions of criteria pollutants from the replacement boilers are less than 10 pounds per hour and 25 tons per year, therefore, LANL is submitting a Notice of Intent for these units. These units and the associated operations will also be regulated under the LANL Title V Operating Permit No. P100-R2M5. A permit application will be submitted within one year of the start of operation to incorporate any new conditions from this NOI into the Title V Operating Permit. With the replacement of two similar operating parameter boilers, LANL will remain a minor PSD source. Typical boiler winter operations is that one boiler operates at full heating capacity, and one boiler is a redundant unit. During occasional extreme cold winter conditions, both boilers can operate simultaneously. Modeling is not required to be conducted for these units under a NOI application. Emission calculations and equipment specifications are included in the corresponding application sections attached to this letter. If you have any questions, please feel free to contact Katelyn Mahoney (Triad), at (505) 396-0619.

In accordance with 20.2.73 NMAC Section 200.B.10, I hereby certify on behalf of LANL that the information submitted in this notification is as complete, true, and accurate as possible, to the best of my personal knowledge.

Sincerely,

Sarah S. Holcomb
Group Leader

Attachment(s): Attachment 1 Los Alamos National Laboratory (AI856) - Notice of Intent for Replacement Boilers at TA-53-0365

Copy: Karen E. Armijo, NA-LA, karen.armijo@nnsa.doe.gov
Robert A. Gallegos, NA-LA, robert.gallegos@nnsa.doe.gov
Stephen N. Jochem, NA-LA, stephen.jochem@nnsa.doe.gov
Steven A. Coleman, Triad, ALDESHQ, scoleman@lanl.gov
Jennifer E. Payne, Triad, ALDESHQ, jpayne@lanl.gov
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Heather C. Seus, Triad, EPC-CP, heatherseus@lanl.gov
Katelyn R. Mahoney, Triad, EPC-CP, kmahoney@lanl.gov
Vincent A. Carretti, Triad, EPC-CP, vcarretti@lanl.gov
Denise A. Huff, Triad, EPC-CP, huff_d@lanl.gov
Triad, EPC-CP Permit Application File
lasomailbox@nnsa.doe.gov
epccorrespondence@lanl.gov
eshq-dcrm@lanl.gov
gc-esh@lanl.gov

ATTACHMENT 1

Notice of Intent Application Forms

EPC-DO: 24-115

LA-UR-24-23912

Date: May 28, 2024

Mail Application To:		For Department use only:
New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.env.nm.gov/aqb		RECEIVED MAY 2 8 2024 Air Quality Bureau

Universal Air Quality Permit Application

Use this application for NOI, NSR, or Title V sources.

Use this application for: the initial application, modifications, technical revisions, and renewals. For technical revisions, complete Sections, 1-A, 1-B, 2-E, 3, 9 and any other sections that are relevant to the requested action; coordination with the Air Quality Bureau permit staff prior to submittal is encouraged to clarify submittal requirements and to determine if more or less than these sections of the application are needed. Use this application for streamline permits as well.

This application is submitted as (check all that apply): ☐ Request for a No Permit Required Determination (no fee)
☐ **Updating** an application currently under NMED review. Include this page and all pages that are being updated (no fee required).
Construction Status: ☐ Not Constructed ☒ Existing Permitted (or NOI) Facility ☐ Existing Non-permitted (or NOI) Facility
Minor Source: ☒ NOI 20.2.73 NMAC ☐ 20.2.72 NMAC application or revision ☐ 20.2.72.300 NMAC Streamline application
Title V Source: ☐ Title V (new) ☐ Title V renewal ☐ TV minor mod. ☐ TV significant mod. ☐ TV Acid Rain: ☐ New ☐ Renewal
PSD Major Source: ☐ PSD major source (new) ☐ Minor Modification to a PSD source ☐ a PSD major modification

Acknowledgements:

☒ I acknowledge that a pre-application meeting is available to me upon request. ☐ Title V Operating, Title IV Acid Rain, and NPR applications have no fees.

☒ $500 NSR application Filing Fee enclosed OR ☐ The full permit fee associated with 10 fee points (required w/ streamline applications).

☒ Check No.: 484197 in the amount of $500

☒ I acknowledge the required submittal format for the hard copy application is printed double sided 'head-to-toe', 2-hole punched (except the Sect. 2 landscape tables is printed 'head-to-head'), numbered tab separators. Incl. a copy of the check on a separate page.

☒ I acknowledge there is an annual fee for permits in addition to the permit review fee: www.env.nm.gov/air-quality/permit-fees-2/.

☐ This facility qualifies for the small business fee reduction per 20.2.75.11.C. NMAC. The full $500.00 filing fee is included with this application and I understand the fee reduction will be calculated in the balance due invoice. The Small Business Certification Form has been previously submitted or is included with this application. (Small Business Environmental Assistance Program Information: www.env.nm.gov/air-quality/small-biz-eap-2/.)

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.73.200.A.1 NMAC** (e.g. application for a new minor source would be 20.2.72.200.A NMAC, one example for a Technical Permit Revision is 20.2.72.219.B.1.b NMAC, a Title V acid rain application would be: 20.2.70.200.C NMAC)

Section 1 – Facility Information

Section 1-A: Company Information

1	Facility Name: **U.S. Department of Energy (DOE)/Los Alamos National Laboratory**	AI # if known: **856**	Updating Permit/NOI #: **New NOI**
		Plant primary SIC Code (4 digits): **8733**	
		Plant NAIC code (6 digits): **928110**	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): **The Laboratory is bounded by the towns of Los Alamos and White Rock, the San Ildefonso Pueblo, the Bandelier National Monument and the Santa Fe National Forest.**		
2	Plant Operator Company Name: **Triad National Security LLC**	Phone/Fax: **505.667.5101/505.665.2679**	

Mail Application To:		**For Department use only:**
New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.env.nm.gov/aqb		

Universal Air Quality Permit Application

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Use this application for: the initial application, modifications, technical revisions, and renewals. For technical revisions, complete Sections, 1-A, 1-B, 2-E, 3, 9 and any other sections that are relevant to the requested action; coordination with the Air Quality Bureau permit staff prior to submittal is encouraged to clarify submittal requirements and to determine if more or less than these sections of the application are needed. Use this application for streamline permits as well.

This application is submitted as (check all that apply)**:** ☐ Request for a No Permit Required Determination (no fee)
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Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.73.200.A.1 NMAC**
(e.g. application for a new minor source would be 20.2.72.200.A NMAC, one example for a Technical Permit Revision is 20.2.72.219.B.1.b NMAC, a Title V acid rain application would be: 20.2.70.200.C NMAC)

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known: **856**	Updating Permit/NOI #: **New NOI**
1	Facility Name: **U.S. Department of Energy (DOE)/Los Alamos National Laboratory**	Plant primary SIC Code (4 digits): **8733**	
		Plant NAIC code (6 digits): **928110**	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): **The Laboratory is bounded by the towns of Los Alamos and White Rock, the San Ildefonso Pueblo, the Bandelier National Monument and the Santa Fe National Forest.**		
2	Plant Operator Company Name: **Triad National Security LLC**	Phone/Fax: **505.667.5101/505.665.2679**	

a	Plant Operator Address: **P.O. Box 1663, Los Alamos, NM 87545**	
b	Plant Operator's New Mexico Corporate ID or Tax ID: **2680007**	
3	Plant Owner(s) name(s): **U.S. Department of Energy (DOE), National Nuclear Security Administration**	Phone/Fax: **505.667.6691**
a	Plant Owner(s) Mailing Address(s): **3747 West Jemez Road, Los Alamos, NM 87544**	
4	Bill To (Company): **Triad National Security, LLC**	Phone/Fax: **505.665.2169**
a	Mailing Address: **P.O Box 1663, MS K490, Los Alamos, NM 87545**	E-mail: **story@lanl.gov**
5	☒ Preparer: **Katelyn Mahoney** ☐ Consultant:	Phone/Fax: **505.396.0619**
a	Mailing Address: **P.O Box 1663, MS J978, Los Alamos, NM 87545**	E-mail: **kmahoney@lanl.gov**
6	Plant Operator Contact: **Sarah S. Holcomb**	Phone/Fax: **505.396.0866**
a	Address: **P.O Box 1663, MS K490, Los Alamos, NM 87545**	E-mail: **sholcomb@lanl.gov**
7	Air Permit Contact: **Heather C. Seus**	Title: **Meteorology and Air Quality Team Leader (Acting)**
a	E-mail: **heatherseus@lanl.gov**	Phone/Fax: **505.412.8832**
b	Mailing Address: **P.O Box 1663, MS J978, Los Alamos, NM 87545**	
c	The designated Air permit Contact will receive all official correspondence (i.e. letters, permits) from the Air Quality Bureau.	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ☒ Yes ☐ No	1.b If yes to question 1.a, is it currently operating in New Mexico? ☒ Yes ☐ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☒ Yes ☐ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ☒ Yes ☐ No
3	Is the facility currently shut down? ☐ Yes ☒ No	If yes, give month and year of shut down (MM/YY): **N/A**
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☒ Yes ☐ No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☐ Yes ☐ No ☒ N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☒ Yes ☐ No	If yes, the permit No. is: **P100-R2M5**
7	Has this facility been issued a No Permit Required (NPR)? ☒ Yes ☐ No	If yes, the NPR No. is: **2195A, 2195Q, 2195S, 2195T, 2195U, 2195V, 2195L, 2195LR1, 2195X, 2195-R75, 2195-R77, 2195-R81, 2195-R90, 2195-R94, 2195-R96, 2195-R97**
8	Has this facility been issued a Notice of Intent (NOI)? ☒ Yes ☐ No	If yes, the NOI No. is: **2597-R1, 2195-R91, 2195-R95**
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☒ Yes ☐ No	If yes, the permit No. is: **632-M1, 634-M2, 1081-M1-R7, 2195, 2195B-M3R3, 2195F-R4, 2195H, 2195N-R2, 2195P-R4**
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☒ Yes ☐ No	If yes, the register No. is: **GCP-3-2195G-R1**

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: **8.37 MMbtu/hr** (for each unit, TA-53-365-BHW-1 and TA-53-365-BHW-2)	Daily: **200.9 MMbtu/day**	Annually: **73,312 MMbtu/yr**
b	Proposed	Hourly: **8.37 MMbtu/hr** (for each unit, TA-53-365-BHW-1B and TA-53-365-BHW-2B)	Daily: **200.9 MMbtu/day**	Annually: **73,312 MMbtu/yr**
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			

a	Current	Hourly: **6.695 MMBtu/hr** (for each unit, TA-53-365-BHW-1 and TA-53-365-BHW-2)	Daily: **160.7 MMBtu/day**	Annually: **58,648 MMbtu/yr**
b	Proposed	Hourly: **6.695 MMBtu/hr** (for each unit, TA-53-365-BHW-1B and TA-53-365-BHW-2B)	Daily: **160.7 MMBtu/day**	Annually: **58,648 MMbtu/yr**

Section 1-D: Facility Location Information

1	Latitude (decimal degrees): **35.868435**	Longitude (decimal degrees): **-106.263279**	County: **Los Alamos**	Elevation (ft): **7000.6**
2	UTM Zone: ☐ 12 or ☒ 13	Datum: ☒ NAD 83 ☐ WGS 84		
a	UTM E (in meters, to nearest 10 meters): **385951.93**	UTM N (in meters, to nearest 10 meters): **3970092.88**		
3	Name and zip code of nearest New Mexico town: **Los Alamos 87544 or 87545**			
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): **Follow Diamond Drive across Otowi Bridge. Continue straight on East Jemez Road, turn left on La Mesita Road. The building is located on the right off of La Mesita after Alvarez.**			
5	The facility is **1.5** (distance) miles **SE** (direction) of **Los Alamos** (nearest town).			
6	Land Status of facility (check one): ☐ Private ☐ Indian/Pueblo ☒ Government ☐ BLM ☐ Forest Service ☐ Military			
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: **Los Alamos County, Sandoval County, Santa Fe County, Rio Arriba County, City of Espanola, San Ildefonso Pueblo, Santa Clara Pueblo, Pojoaque Pueblo, Cochiti Pueblo**			
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/air-quality/modeling-publications/)? ☒ Yes ☐ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers:			
9	Name nearest Class I area: **Bandelier Wilderness Area (the wilderness portion of Bandelier National Monument)**			
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): **3.4 km**			
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: **N/A**			
12	Method(s) used to delineate the Restricted Area: **N/A** "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.			
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☒ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.			
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☐ No ☒ Yes If yes, what is the name and permit number (if known) of the other facility? **P100-R2M5**			

Section 1-E: Proposed Operating Schedule (The 1-E.1 & 1-E.2 operating schedules may become conditions in the permit.)

1	Facility **maximum** operating ($\frac{\text{hours}}{\text{day}}$): **24**	($\frac{\text{days}}{\text{week}}$): **7**	($\frac{\text{weeks}}{\text{year}}$): **52**	($\frac{\text{hours}}{\text{year}}$): **8760**		
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start:	☐AM ☐PM	End:	☐AM ☐PM		
3	Month and year of anticipated start of construction: **Spring 2025**					
4	Month and year of anticipated construction completion: **Fall 2025**					
5	Month and year of anticipated startup of new or modified facility: **Fall 2025**					
6	Will this facility operate at this site for more than one year? ☒ Yes ☐ No					

Section 1-F: Other Facility Information

1	Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related to this facility? ☐ Yes ☒ No If yes, specify:		
a	If yes, NOV date or description of issue:		NOV Tracking No:
b	Is this application in response to any issue listed in 1-F, 1 or 1a above? ☐ Yes ☒ No If Yes, provide the 1c & 1d info below:		
c	Document Title:	Date:	Requirement # (or page # and paragraph #):
d	Provide the required text to be inserted in this permit:		
2	Is air quality dispersion modeling or modeling waiver being submitted with this application? ☐ Yes ☒ No		
3	Does this facility require an "Air Toxics" permit under 20.2.72.400 NMAC & 20.2.72.502, Tables A and/or B? ☐ Yes ☒ No		
4	Will this facility be a source of federal Hazardous Air Pollutants (HAP)? ☒ Yes ☐ No		
a	If Yes, what type of source? ☐ **Major** (☐ ≥10 tpy of any single HAP **OR** ☐ ≥25 tpy of any combination of HAPS) **OR** ☒ **Minor** (☒ <10 tpy of any single HAP **AND** ☒ <25 tpy of any combination of HAPS)		
5	Is any unit exempt under 20.2.72.202.B.3 NMAC? ☐ Yes ☒ No		
a	If yes, include the name of company providing commercial electric power to the facility: _____ Commercial power is purchased from a commercial utility company, which specifically does not include power generated on site for the sole purpose of the user.		

Section 1-G: Streamline Application (This section applies to 20.2.72.300 NMAC Streamline applications only)

1	☐ I have filled out Section 18, "Addendum for Streamline Applications."	☒ N/A (This is not a Streamline application.)

Section 1-H: Current Title V Information - Required for all applications from TV Sources

(Title V-source required information for all applications submitted pursuant to 20.2.72 NMAC (Minor Construction Permits), or 20.2.74/20.2.79 NMAC (Major PSD/NNSR applications), and/or 20.2.70 NMAC (Title V))

1	Responsible Official (R.O.) **Theodore A. Wyka** (20.2.70.300.D.2 NMAC):		Phone: **505.667.5105**
a	R.O. Title: **Manager**	R.O. e-mail: **theodore.wyka@nnsa.doe.gov**	
b	R. O. Address: **3747 West Jemez Road, Los Alamos, NM 87544**		
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): **N/A**		Phone:
a	A. R.O. Title:	A. R.O. e-mail:	
b	A. R. O. Address:		
3	Company's Corporate or Partnership Relationship to any other Air Quality Permittee (List the names of any companies that have operating (20.2.70 NMAC) permits and with whom the applicant for this permit has a corporate or partnership relationship): **NA**		
4	Name of Parent Company ("Parent Company" means the primary name of the organization that owns the company to be permitted wholly or in part.): **U.S. Department of Energy, National Nuclear Security Administration**		
a	Address of Parent Company: **3747 West Jemez Road, Los Alamos, NM 87544**		
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.): **NA**		
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: **Triad National Security, LLC - Steve Story (505) 665-2169**		

7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers: **Taos Pueblo (69), Picuris Pueblo (56), Jicarilla Apache (67), Ohkay Owingeh Pueblo (19), Santa Clara Pueblo (10), San Ildefonso Pueblo (<1), Pojoaque Pueblo (13), Nambe Pueblo (24), Tesuque Pueblo (19), Cochiti Pueblo (13), Santa Domingo Pueblo (27), Zia Pueblo (30), San Felipe Pueblo (38), Santa Ana Pueblo (40), Jemez Pueblo (19), Sandia Pueblo (61), Laguna Pueblo (77), Bernalillo County (56)**

Section 1-I – Submittal Requirements

Each 20.2.73 NMAC (**NOI**), a 20.2.70 NMAC (**Title V**), a 20.2.72 NMAC (**NSR** minor source), or 20.2.74 NMAC (**PSD**) application package shall consist of the following:

Hard Copy Submittal Requirements:

1) One hard copy **original signed and notarized application package** **printed double sided** **'head-to-toe'** **2-hole punched** as we bind the document on top, not on the side; except Section 2 (landscape tables), which should be head-to-head. Please use **numbered tab separators** in the hard copy submittal(s) as this facilitates the review process. For NOI submittals only, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required. Please include a copy of the check on a separate page.

2) If the application is for a minor NSR, PSD, NNSR, or Title V application, include one working hard **copy** for Department use. This copy should be printed in book form, 3-hole punched, and **must be double sided**. Note that this is in addition to the head-to-to 2-hole punched copy required in 1) above. Minor NSR Technical Permit revisions (20.2.72.219.B NMAC) only need to fill out Sections 1-A, 1-B, 3, and should fill out those portions of other Section(s) relevant to the technical permit revision. TV Minor Modifications need only fill out Sections 1-A, 1-B, 1-H, 3, and those portions of other Section(s) relevant to the minor modification. NMED may require additional portions of the application to be submitted, as needed.

3) The entire NOI or Permit application package, including the full modeling study, should be submitted electronically. Electronic files for applications for NOIs, any type of General Construction Permit (GCP), or technical revisions to NSRs must be submitted with compact disk (CD) or digital versatile disc (DVD). For these permit application submittals, **two** CD copies are required (in sleeves, not crystal cases, please), with additional CD copies as specified below. NOI applications require only a single CD submittal. Electronic files for other New Source Review (construction) permits/permit modifications or Title V permits/permit modifications can be submitted on CD/DVD or sent through AQB's secure file transfer service.

Electronic files sent by (check one):

☒ CD/DVD attached to paper application

☐ Secure electronic transfer. Air Permit Contact Name_____, Email_____ Phone number _____.

a. If the file transfer service is chosen by the applicant, after receipt of the application, the Bureau will email the applicant with instructions for submitting the electronic files through a secure file transfer service. Submission of the electronic files through the file transfer service needs to be completed within 3 business days after the invitation is received, so the applicant should ensure that the files are ready when sending the hard copy of the application. The applicant will not need a password to complete the transfer. **Do not use the file transfer service for NOIs, any type of GCP, or technical revisions to NSR permits.**

4) Optionally, the applicant may submit the files with the application on compact disk (CD) or digital versatile disc (DVD) following the instructions above and the instructions in 5 for applications subject to PSD review.

5) If **air dispersion modeling** is required by the application type, include the **NMED Modeling Waiver** and/or electronic air dispersion modeling report, input, and output files. The dispersion modeling ***summary report only*** should be submitted as hard copy(ies) unless otherwise indicated by the Bureau.

6) If the applicant submits the electronic files on CD and the application is subject to PSD review under 20.2.74 NMAC (PSD) or NNSR under 20.2.79 NMC include,
   a. one additional CD copy for US EPA,
   b. one additional CD copy for each federal land manager affected (NPS, USFS, FWS, USDI) and,
   c. one additional CD copy for each affected regulatory agency other than the Air Quality Bureau.

If the application is submitted electronically through the secure file transfer service, these extra CDs do not need to be submitted.

Electronic Submittal Requirements [in addition to the required hard copy(ies)]:

1) All required electronic documents shall be submitted as 2 separate CDs or submitted through the AQB secure file transfer service. Submit a single PDF document of the entire application as submitted and the individual documents comprising the application.

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the text and formulas in the documents (copy & paste). Any documents that cannot be submitted in a Microsoft Office compatible format shall be saved as a PDF file from within the electronic document that created the file. If you are unable to provide Microsoft office compatible electronic files or internally generated PDF files of files (items that were not created electronically: i.e. brochures, maps, graphics, etc,), submit these items in hard copy format. We must be able to review the formulas and inputs that calculated the emissions.

3) It is preferred that this application form be submitted as 4 electronic files (3 MSWord docs: Universal Application section 1 [UA1], Universal Application section 3-19 [UA3], and Universal Application 4, the modeling report [UA4]) and 1 Excel file of the tables (Universal Application section 2 [UA2]). Please include as many of the 3-19 Sections as practical in a single MS Word electronic document. Create separate electronic file(s) if a single file becomes too large or if portions must be saved in a file format other than MS Word.

4) The electronic file names shall be a maximum of 25 characters long (including spaces, if any). The format of the electronic Universal Application shall be in the format: "A-3423-FacilityName". The "A" distinguishes the file as an application submittal, as opposed to other documents the Department itself puts into the database. Thus, all electronic application submittals should begin with "A-". Modifications to existing facilities should use the core permit number (i.e. '3423') the Department assigned to the facility as the next 4 digits. Use 'XXXX' for new facility applications. The format of any separate electronic submittals (additional submittals such as non-Word attachments, re-submittals, application updates) and Section document shall be in the format: "A-3423-9-description", where "9" stands for the section # (in this case Section 9-Public Notice). Please refrain, as much as possible, from submitting any scanned documents as this file format is extremely large, which uses up too much storage capacity in our database. Please take the time to fill out the header information throughout all submittals as this will identify any loose pages, including the Application Date (date submitted) & Revision number (0 for original, 1, 2, etc.; which will help keep track of subsequent partial update(s) to the original submittal. Do not use special symbols (#, @, etc.) in file names. The footer information should not be modified by the applicant.

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Section 20: Other Relevant Information

Section 21: Addendum for Landfill Applications

Section 22: Certification Page

Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. If applying for a NOI under 20.2.73 NMAC, equipment exemptions under 2.72.202 NMAC do not apply.

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
TA-53-365-BHW-1	Boiler	Sellers	15 Seniors-2-200w	99031-1	8.37 MMBtu	8.37 MMBtu	1988 1988	none TA53_BHW		☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
TA-53-365-BHW-2	Boiler	Sellers	15 Seniors-2-200w	99031-2	8.37 MMBtu	8.37 MMBtu	1988 1988	none TA53_BHW		☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☑ To be Replaced	N/A	N/A
TA-53-365-BHW-1B	Boiler	Sellers	S-200-W	106110A	8.37 MMBtu	7.11 MMBtu	9/15/2023 2025	see 2-C TA53_BHW		☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	TA-53-365-BHW-1
TA-53-365-BHW-2B	Boiler	Sellers	S-200-W	106110B	8.37 MMBtu	7.11 MMBtu	9/15/2023 2025	see 2-C TA53_BHW		☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☑ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	TA-53-365-BHW-2
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
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										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		
										☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced		

[1] Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.

[2] Specify dates required to determine regulatory applicability.

[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.

[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark ignition

Table 2-D: Maximum Emissions (under normal operating conditions)

☐ **This Table was intentionally left blank because it would be identical to Table 2-E.**

Maximum Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) & Toxic Air Pollutants (TAPs) in Table 2-I. Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TA-53-365-BHW-1B	0.813	3.559	0.310	1.356	0.0447	0.196	0.00488	0.0214	0.0628	0.275	0.0628	0.275	0.0628	0.275	-	-	4.06E-06	1.78E-05
TA-53-365-BHW-2B	0.813	3.559	0.310	1.356	0.0447	0.196	0.00488	0.0214	0.0628	0.275	0.0628	0.275	0.0628	0.275	-	-	4.06E-06	1.78E-05
Totals	1.625	7.119	0.619	2.713	0.0894	0.392	0.00975	0.0427	0.126	0.550	0.126	0.550	0.126	0.550	-	-	8.13E-06	3.56E-05

Table 2-F: Additional Emissions during Startup, Shutdown, and Routine Maintenance (SSM)

X This table is intentionally left blank since all emissions at this facility due to routine or predictable startup, shutdown, or scehduled maintenance are no higher than those listed in Table 2-E and a malfunction emission limit is not already permitted or requested. If you are required to report GHG emissions as described in Section 6a, include any GHG emissions during Startup, Shutdown, and/or Scheduled Maintenance (SSM) in Table 2-P. Provide an explanations of SSM emissions in Section 6 and 6a.

All applications for facilities that have emissions during routine our predictable startup, shutdown or scheduled maintenance (SSM)[1], including NOI applications, must include in this table the Maximum Emissions during routine or predictable startup, shutdown and scheduled maintenance (20.2.7 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.D.2 NMAC). In Section 6 and 6a, provide emissions calculations for all SSM emissions reported in this table. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (https://www.env.nm.gov/aqb/permit/aqb_pol.html) for more detailed instructions. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM^2		$PM10^2$		$PM2.5^2$		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
N/A																		
Totals																		

[1] **For instance**, if the short term steady-state Table 2-E emissions are 5 lb/hr and the SSM rate is 12 lb/hr, enter 7 lb/hr in this table. If the annual steady-state Table 2-E emissions are 21.9 TPY, and the number of scheduled SSM events result in annual emissions of 31.9 TPY, enter 10.0 TPY in the table below.

Emission Estimates

Process Data

Fuel			
Natural gas			
	Heat Content	1030 Btu/scf	
	Sulfur Content	0.75 grains/100 scf	
Initial Equipment	TA-53-365-BHW-1 and TA-53-365-BHW-2	8.37 MMBtu/hr	Maximum heat input
Replacement Equipment	TA-53-365-BHW-1B and TA-53-365-BHW-2B	8.37 MMBtu/hr	Maximum heat input
		7.11 MMBtu/hr	Maximum heat input derated by 15% for altitude[1]

1 The derated value is used for the requested allowable emission calculations.

Criteria Pollutants

Criteria Pollutant Emission Factors

			NOx	CO	SOx	TSP	PM_{10}	$PM_{2.5}$	VOC
Initial Equipment[1]	TA-53-365-BHW-1	lb/MMScf	100	84	0.6	7.6	7.6	7.6	5.5
	TA-53-365-BHW-2	lb/MMBtu	0.1	0.08	0.0006	0.007	0.007	0.007	0.005
With No Low Nox Control for Maximum Emissions									
Replacement Equipment[2]	TA-53-365-BHW-1B	lb/MMScf	100		0.6				5.5
	TA-53-365-BHW-2B	lb/MMBtu	0.1	0.037	0.0006	0.0075	0.0075	0.0075	0.005
With Low NOx Control for Requested Allowable Emissions									
Replacement Equipment[3]	TA-53-365-BHW-1B	lb/MMScf			0.6				5.5
	TA-53-365-BHW-2B	lb/MMBtu	0.036	0.037	0.0006	0.0075	0.0075	0.0075	0.005

1 Emission factors from AP-42, 7/98, Section 1.4, Natural Gas Combustion.

2 Emission factors for NOx (Uncontrolled), SOx and VOC from AP-42, 7/98, Section 1.4, Natural Gas Combustion.
Emission Factors for CO, TSP, PM_{10}, $PM_{2.5}$ provided by Sellers' Manufacturing Co.

3 Emission factors for SOx and VOC from AP-42, 7/98, Section 1.4, Natural Gas Combustion.
Emission Factors for Nox (Controlled), CO, TSP, PM_{10}, $PM_{2.5}$ provided by Sellers' Manufacturing Co.

Maximum Emissions, lb/hr - Criteria Pollutants

			Nox[1]	CO	SOx	TSP	PM_{10}	$PM_{2.5}$	VOC
Initial Equipment	TA-53-365-BHW-1		0.813	0.683	0.00488	0.0618	0.0618	0.0618	0.0447
	TA-53-365-BHW-2		0.813	0.683	0.00488	0.0618	0.0618	0.0618	0.0447
		Total	1.625	1.365	0.00975	0.124	0.124	0.124	0.0894
Replacement Equipment	TA-53-365-BHW-1B		0.813	0.310	0.00488	0.0628	0.0628	0.0628	0.0447
	TA-53-365-BHW-2B		0.813	0.310	0.00488	0.0628	0.0628	0.0628	0.0447
		Total[2]	1.625	0.619	0.00975	0.126	0.126	0.126	0.0894

1 Boiler lb/hr NOx assumes no controls.

2 The maximum heat input value (not derated value) was used to calculate for maximum emissions.

Maximum Emissions, tpy - Criteria Pollutants

			NOx[1]	CO	SOx	TSP	PM_{10}	$PM_{2.5}$	VOC
Initial Equipment	TA-53-365-BHW-1		3.559	2.990	0.0214	0.271	0.271	0.271	0.196
	TA-53-365-BHW-2		3.559	2.990	0.0214	0.271	0.271	0.271	0.196
		Total	7.119	5.980	0.0427	0.541	0.541	0.541	0.392
Replacement Equipment	TA-53-365-BHW-1B		3.559	1.356	0.0214	0.275	0.275	0.275	0.196
	TA-53-365-BHW-2B		3.559	1.356	0.0214	0.275	0.275	0.275	0.196
		Total[2]	7.119	2.713	0.0427	0.550	0.550	0.550	0.392

1 Boiler tpy NOx assumes no controls and calculated using 8760 hours/year.

2 The maximum heat input value (not derated value) was used to calculate for maximum emissions.

Requested Allowable Emissions - Criteria Pollutants

			NOx[2]	CO	SOx	TSP	PM_{10}	$PM_{2.5}$	VOC
Boilers - All LANL, tpy[1]			80	80	50	50	50	50	50
TA-53-365-BHW-1B		lb/hr[3]	0.256	0.263	0.00414	0.0534	0.0534	0.0534	0.0380
		tpy[3]	1.122	1.153	0.0182	0.234	0.234	0.234	0.166
TA-53-365-BHW-2B		lb/hr[3]	0.256	0.263	0.00414	0.0534	0.0534	0.0534	0.0380
		tpy[3]	1.122	1.153	0.0182	0.234	0.234	0.234	0.166

1 Values are the current allowable emissions within Permit P100-R2M5.
The "Boilers - All LANL" includes all boilers at LANL, such as TA-53-365-BHW-1B and 2B, RLUOB boilers, and small exempt/ insignificant units.

2 NOx emissions are controlled.

3 The maximum heat input was derated by 15% for Altitude.

Hazardous Air Pollutants

Hazardous Air Pollutant Emission Factors

		HAP	Emission Factors[1] lb/MMscf	Emissions lb/MMBtu
Boilers - natural gas	Organics			
		POM	8.82E-05	8.56E-08
		Benzene	2.10E-03	2.04E-06
		Dichlorobenzene	1.20E-03	1.17E-06
		Formaldehyde	7.50E-02	7.28E-05
		Hexane	1.80E+00	1.75E-03
		Naphthalene	6.10E-04	5.92E-07
		Toluene	3.40E-03	3.30E-06
	Metals			
		Arsenic	2.00E-04	1.94E-07
		Barium	4.40E-03	4.27E-06
		Beryllium	1.20E-05	1.17E-08
		Cadmium	1.10E-03	1.07E-06
		Chromium	1.40E-03	1.36E-06
		Cobalt	8.40E-05	8.16E-08
		Copper	8.50E-04	8.25E-07
		Lead	5.00E-04	4.85E-07
		Manganese	3.80E-04	3.69E-07
		Mercury	2.60E-04	2.52E-07
		Molybdenum	1.10E-03	1.07E-06
		Nickel	2.10E-03	2.04E-06
		Selenium	2.40E-05	2.33E-08
		Vanadium	2.30E-03	2.23E-06
		Zinc	2.90E-02	2.82E-05
			Total	1.87E-03

1 Gas emission factors from AP-42, 7/98, Section 1.4 - Natural Gas Combustion, Tables 1.4-2, 1.4-3, and 1.4-4.

Hazardous Air Pollutant Emission Estimates - Potential to Emit

	lb/hr	tpy[1]
Total HAPs	0.0157	0.0686
Total Lead	4.06E-06	1.78E-05

1 Potential to Emit calculated using 8760 hours/year.

Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at https://www.env.nm.gov/wp-content/uploads/sites/2/2017/10/InsignificantListTitleV.pdf. TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[2]	For Each Piece of Equipment, Check Onc
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction[2]	
N/A							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
							☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/AQB List of Insignificant Activities, dated September 15, 2008. Emissions from these insignificant activities do not need to be reported, unless specifically requested.

[2] Specify date(s) required to determine regulatory applicability.

Table 2-C: Emissions Control Equipment

Unit and stack numbering must correspond throughout the application package. Only list control equipment for TAPs if the TAP's maximum uncontrolled emissions rate is over its respective threshold as listed in 20.2.72 NMAC, Subpart V, Tables A and B. In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions.

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
TA-53-365-BHW-1	None					
TA-53-365-BHW-2	None					
TA-53-365-BHW-1B	Low-NOx burner	2024	Nitrogen oxides	TA-53-365-BHW-1B	60	AP-42
TA-53-365-BHW-2B	Low-NOx burner	2024	Nitrogen oxides	TA-53-365-BHW-2B	60	AP-42

[1] List each control device on a separate line. For each control device, list all emission units controlled by the control device.

Table 2-E: Requested Allowable Emissions

Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or $1.41E^{-4}$).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TA-53-365-BHW-1B	0.256	1.122	0.263	1.153	0.0380	0.166	0.00414	0.0182	0.0534	0.234	0.0534	0.234	0.0534	0.234	-	-	-	-
TA-53-365-BHW-2B	0.256	1.122	0.263	1.153	0.0380	0.166	0.00414	0.0182	0.0534	0.234	0.0534	0.234	0.0534	0.234	-	-	-	-
Totals	0.512	2.244	0.526	2.306	0.0760	0.333	0.00829	0.0363	0.107	0.467	0.107	0.467	0.107	0.467	-	-	-	-

[1] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-G: Stack Exit and Fugitive Emission Rates for Special Stacks

☐ I have elected to leave this table blank because this facility does not have any stacks/vents that split emissions from a single source or combine emissions from more than one source listed in table 2-A. Additionally, the emission rates of all stacks match the Requested allowable emission rates stated in Table 2-E.

Use this table to list stack emissions (requested allowable) from split and combined stacks. List Toxic Air Pollutants (TAPs) and Hazardous Air Pollutants (HAPs) in Table 2-I. List all fugitives that are associated with the normal, routine, and non-emergency operation of the facility. Unit and stack numbering must correspond throughout the application package. Refer to Table 2-E for instructions on use of the "-" symbol and on significant figures.

Stack No.	Serving Unit Number(s) from Table 2-A	NOx		CO		VOC		SOx		PM		PM10		PM2.5		☐ H_2S or ☑ Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TA53_BHW	TA-53-365-BHW-1B TA-53-365-BHW-2B	0.512	2.244	0.526	2.306	0.0760	0.333	0.00829	0.0363	0.107	0.467	0.107	0.467	0.107	0.467	-	-

Table 2-H: Stack Exit Conditions

Unit and stack numbering must correspond throughout the application package. Include the stack exit conditions for each unit that emits from a stack, including blowdown venting parameters and tank emissions. If the facility has multiple operating scenarios, complete a separate Table 2-H for each scenario and, for each, type scenario name here:

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H=Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
TA53_BHW	TA-53-365-BHW-1B TA-53-365-BHW-2B	V	Yes	22	Model sets to ambient.	Model calculates for rain cap.	-	-	0.001	1.00

Table 2-I: Stack Exit and Fugitive Emission Rates for HAPs and TAPs

In the table below, report the Potential to Emit for each HAP from each regulated emission unit listed in Table 2-A, only if the entire facility emits the HAP at a rate greater than or equal to one (1) ton per year For each such emission unit, HAPs shall be reported to the nearest 0.1 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources calculated to the nearest 0.1 ton per year. Per 20.2.72.403.A.1 NMAC, facilities not exempt [see 20.2.72.402.C NMAC] from TAP permitting shall report each TAP that has an uncontrolled emission rate in excess of its pounds per hour screening level specified in 20.2.72.502 NMAC. TAPs shall be reported using one more significant figure than the number of significant figures shown in the pound per hour threshold corresponding to the substance. Use the HAP nomenclature as it appears in Section 112 (b) of the 1990 CAAA and the TAP nomenclature as it listed in 20.2.72.502 NMAC. Include tank-flashing emissions estimates of HAPs in this table. For each HAP or TAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above.

Stack No.	Unit No.(s)	Total HAPs		Provide Pollutant Name Here ☐HAP or☐ TAP		Provide Pollutant Name Here ☐HAP or☐ TAP		Provide Pollutant Name Here ☐HAP or☐ TAP		Provide Pollutant Name Here ☐HAP or☐ TAP		Provide Pollutant Name Here ☐HAP or☐ TAP		Provide Pollutant Name Here ☐HAP or☐ TAP		Provide Pollutant Name Here ☐HAP or☐ TAP		Provide Pollutant Name Here ☐ HAP or☐ TAP ☐	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
See Calculations Worksheet for HAP estimates by emission unit.																			
Totals:																			

Table 2-J: Fuel

Specify fuel characteristics and usage. Unit and stack numbering must correspond throughout the application package.

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
TA-53-365-BHW-1B	Natural Gas	Pipeline Quality Natural Gas	1030 Btu/scf	N/A	870 MMscf max (Current Fuel Limit in P100-R2M5)	-	-
TA-53-365-BHW-2B	Natural Gas	Pipeline Quality Natural Gas	1030 Btu/scf	N/A	870 MMscf max (Current Fuel Limit in P100-R2M5)	-	-

Table 2-K: Liquid Data for Tanks Listed in Table 2-L

For each tank, list the liquid(s) to be stored in each tank. If it is expected that a tank may store a variety of hydrocarbon liquids, enter "mixed hydrocarbons" in the Composition column for that tank and enter the corresponding data of the most volatile liquid to be stored in the tank. If tank is to be used for storage of different materials, list all the materials in the "All Calculations" attachment, run the newest version of TANKS on each, and use the material with the highest emission rate to determine maximum uncontrolled and requested allowable emissions rate. The permit will specify the most volatile category of liquids that may be stored in each tank. Include appropriate tank-flashing modeling input data. Use additional sheets if necessary. Unit and stack numbering must correspond throughout the application package.

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
N/A									

Table 2-L: Tank Data

Include appropriate tank-flashing modeling input data. Use an addendum to this table for unlisted data categories. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary. See reference Table 2-L2. Note: 1.00 bbl = 10.159 M3 = 42.0 gal

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
N/A													

Table 2-L2: Liquid Storage Tank Data Codes Reference Table

Roof Type	Seal Type, Welded Tank Seal Type		Seal Type, Riveted Tank Seal Type		Roof, Shell Color	Paint Condition
FX: Fixed Roof	**Mechanical Shoe Seal**	**Liquid-mounted resilient seal**	**Vapor-mounted resilient seal**	**Seal Type**	**WH**: White	Good
IF: Internal Floating Roof	**A**: Primary only	**A**: Primary only	**A**: Primary only	**A**: Mechanical shoe, primary only	**AS**: Aluminum (specular)	Poor
EF: External Floating Roof	**B**: Shoe-mounted secondary	**B**: Weather shield	**B**: Weather shield	**B**: Shoe-mounted secondary	**AD**: Aluminum (diffuse)	
P: Pressure	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**LG**: Light Gray	
					MG: Medium Gray	
					BL: Black	
					OT: Other (specify)	

Note: 1.00 bbl = 0.159 M^3 = 42.0 gal

Table 2-M: Materials Processed and Produced (Use additional sheets as necessary.)

Material Processed				Material Produced			
Description	**Chemical Composition**	**Phase (Gas, Liquid, or Solid)**	**Quantity (specify units)**	**Description**	**Chemical Composition**	**Phase**	**Quantity (specify units)**
N/A							

Table 2-N: CEM Equipment

Enter Continuous Emissions Measurement (CEM) Data in this table. If CEM data will be used as part of a federally enforceable permit condition, or used to satisfy the requirements of a state or federal regulation, include a copy of the CEM's manufacturer specification sheet in the Information Used to Determine Emissions attachment. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy
N/A									

Table 2-O: Parametric Emissions Measurement Equipment

Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
N/A								

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box.

☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]								Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	1	298	25	22,800	footnote 3									
N/A	mass GHG														
	CO_2e														
	mass GHG														
	CO_2e														
	mass GHG														
	CO_2e														
	mass GHG														
	CO_2e														
	mass GHG														
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	CO_2e														
	mass GHG														
	CO_2e														
	mass GHG														
	CO2e														
Total	mass GHG														
	CO_2e														

[1] **GWP** (Global Warming Potential): Applicants must use the most current GWPs codified in Table A-1 of 40 CFR part 98. GWPs are subject to change, therefore, applicants need to check 40 CFR 98 to confirm GWP values.

[2] For **HFCs** or **PFCs** describe the specific HFC or PFC compound and use a separate column for each individual compound.

[3] For each new compound, enter the appropriate GWP for each HFC or PFC compound from Table A-1 in 40 CFR 98.

[4] Green house gas emissions on a **mass basis** is the ton per year green house gas emission before adjustment with its GWP.

Section 3

Application Summary

The **Application Summary** shall include a brief description of the facility and its process, the type of permit application, the applicable regulation (i.e. 20.2.72.200.A.X, or 20.2.73 NMAC) under which the application is being submitted, and any air quality permit numbers associated with this site. If this facility is to be collocated with another facility, provide details of the other facility including permit number(s). In case of a revision or modification to a facility, provide the lowest level regulatory citation (i.e. 20.2.72.219.B.1.d NMAC) under which the revision or modification is being requested. Also describe the proposed changes from the original permit, how the proposed modification will affect the facility's operations and emissions, de-bottlenecking impacts, and changes to the facility's major/minor status (both PSD & Title V).

The **Process Summary** shall include a brief description of the facility and its processes.

Startup, Shutdown, and Maintenance (SSM) routine or predictable emissions: Provide an overview of how SSM emissions are accounted for in this application. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions.

Application Summary

In accordance with the requirements of 20.2.73 NMAC Section 200.A.1 Notice of Intent (NOI) and guidance from NMED-AQB Permitting Section, Los Alamos National Laboratory (LANL) is providing notification of intent to replace two existing Title V permitted boilers, TA-53-365-BHW-1 and TA-53-365-BHW-2, with two equivalent replacement low NOx boilers, TA-53-365-BHW-1B and TA-53-365-BHW-2B. Emission calculations for the new replacement boilers are much less than 10 pounds per hour and 25 tons per year, therefore, LANL is submitting a Notice of Intent for these units. Emission calculations and equipment specifications are included in the corresponding application sections.

The requested allowable emissions for the replacement boilers are less than the maximum emissions from the original boilers in previous Title V applications. For the replacement boilers the maximum heat input was derated by 15% for high altitude and the vendor provided emission factors for NOx and CO were lower than those used for the original boilers. Therefore, the requested emissions for the replacement boilers will decrease for all criteria pollutants.

The units and the associated operations will be regulated under the LANL Title V Operating Permit No. P100-R2M5. With the replacement of two similar operating parameter boilers, LANL will remain a minor PSD source. Typical boiler winter operations are that one boiler operates at full heating capacity, and one boiler is a redundant unit. During occasional extreme cold winter conditions, both boilers can operate simultaneously. Modeling is not required to be conducted for these units under a NOI application. A permit application will be submitted within one year of start of operation to incorporate any new conditions from this NOI into the Title V Operating Permit.

Process Summary

The original boilers are permitted in Title V Permit P100-R2M5 and each have a maximum heat input rating of 8.37 MMBtu/hr without low NOX controls. They are hot water boilers for Technical Area 53 Building 365 (TA-53-0365) industrial hot water distribution system for heating systems associated with multiple building air handling units. LANL is in the process of replacing the two original boilers with two new equivalent replacement boilers, only the new units have low NOX controls. The original and new boilers are the same make and model, Sellers S-Series natural gas fired hot water boilers with a maximum heat input of 8.37 MMBtu/hr.

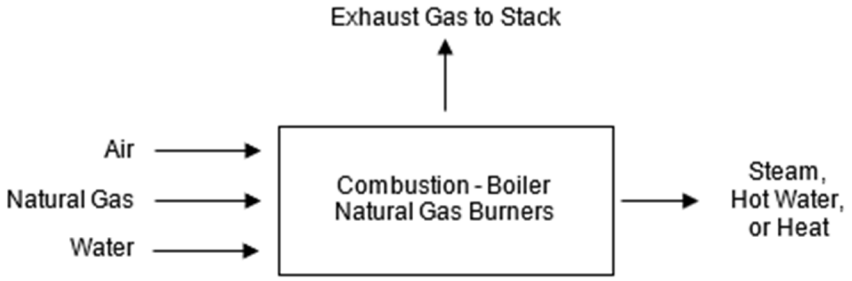
Startup, Shutdown, and Maintenance (SSM)

Startups and shutdowns are minimal and emissions at those times are not expected to differ substantially from steady-state emissions. The units are checked periodically during the heating season to ensure proper operation. Routine and preventive maintenance are performed during the warm weather months.

Section 4

Process Flow Sheet

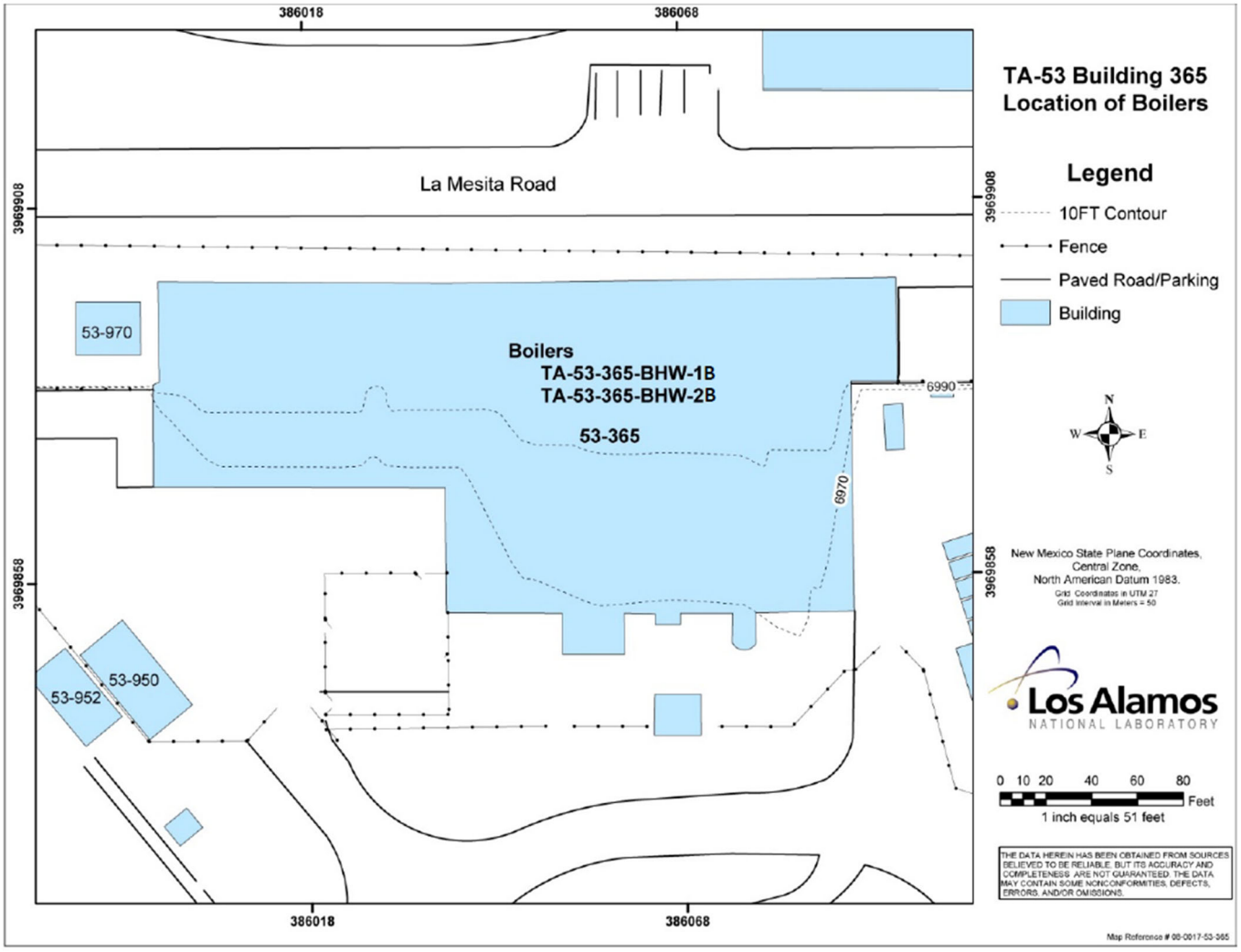
A **process flow sheet** and/or block diagram indicating the individual equipment, all emission points and types of control applied to those points. The unit numbering system should be consistent throughout this application.



Section 5

Plot Plan Drawn to Scale

A **plot plan drawn to scale** showing emissions points, roads, structures, tanks, and fences of property owned, leased, or under direct control of the applicant. This plot plan must clearly designate the restricted area as defined in UA1, Section 1-D.12. The unit numbering system should be consistent throughout this application.



Section 6

All Calculations

Show all calculations used to determine both the hourly and annual controlled and uncontrolled emission rates. All calculations shall be performed keeping a minimum of three significant figures. Document the source of each emission factor used (if an emission rate is carried forward and not revised, then a statement to that effect is required). If identical units are being permitted and will be subject to the same operating conditions, submit calculations for only one unit and a note specifying what other units to which the calculations apply. All formulas and calculations used to calculate emissions must be submitted. The "Calculations" tab in the UA2 has been provided to allow calculations to be linked to the emissions tables. Add additional "Calc" tabs as needed. If the UA2 or other spread sheets are used, all calculation spread sheet(s) shall be submitted electronically in Microsoft Excel compatible format so that formulas and input values can be checked. Format all spread sheets and calculations such that the reviewer can follow the logic and verify the input values. Define all variables. If calculation spread sheets are not used, provide the original formulas with defined variables. Additionally, provide subsequent formulas showing the input values for each variable in the formula. All calculations, including those calculations are imbedded in the Calc tab of the UA2 portion of the application, the printed Calc tab(s), should be submitted under this section.

Tank Flashing Calculations: The information provided to the AQB shall include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., NOI, permit, or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis. If Hysis is used, all relevant input parameters shall be reported, including separator pressure, gas throughput, and all other relevant parameters necessary for flashing calculation.

SSM Calculations: It is the applicant's responsibility to provide an estimate of SSM emissions or to provide justification for not doing so. In this Section, provide emissions calculations for Startup, Shutdown, and Routine Maintenance (SSM) emissions listed in the Section 2 SSM and/or Section 22 GHG Tables and the rational for why the others are reported as zero (or left blank in the SSM/GHG Tables). Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on calculating SSM emissions. If SSM emissions are greater than those reported in the Section 2, Requested Allowables Table, modeling may be required to ensure compliance with the standards whether the application is NSR or Title V. Refer to the Modeling Section of this application for more guidance on modeling requirements.

Glycol Dehydrator Calculations: The information provided to the AQB shall include the manufacturer's maximum design recirculation rate for the glycol pump. If GRI-Glycalc is used, the full input summary report shall be included as well as a copy of the gas analysis that was used.

Road Calculations: Calculate fugitive particulate emissions and enter haul road fugitives in Tables 2-A, 2-D and 2-E for:

1. If you transport raw material, process material and/or product into or out of or within the facility and have PER emissions greater than 0.5 tpy.
2. If you transport raw material, process material and/or product into or out of the facility more frequently than one round trip per day.

Significant Figures:

A. All emissions standards are deemed to have at least two significant figures, but not more than three significant figures.

B. At least 5 significant figures shall be retained in all intermediate calculations.

C. In calculating emissions to determine compliance with an emission standard, the following rounding off procedures shall be used:

(1) If the first digit to be discarded is less than the number 5, the last digit retained shall not be changed;

(2) If the first digit discarded is greater than the number 5, or if it is the number 5 followed by at least one digit other than the number zero, the last figure retained shall be increased by one unit; **and**

(3) If the first digit discarded is exactly the number 5, followed only by zeros, the last digit retained shall be rounded upward if it is an odd number, but no adjustment shall be made if it is an even number.

(4) The final result of the calculation shall be expressed in the units of the standard.

Control Devices: In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions. The applicant can indicate in this section of the application if they chose to not take credit for the reduction in emission rates. For notices of intent submitted under 20.2.73 NMAC, only uncontrolled emission rates can be considered to determine applicability unless the state or federal Acts require the control. This information is necessary to determine if federally enforceable conditions are necessary for the control device, and/or if the control device produces its own regulated pollutants or increases emission rates of other pollutants.

Emission calculations for the boilers are included in the “Calculations” worksheet in the UA-2 spreadsheet.

Section 7

Information Used to Determine Emissions

Information Used to Determine Emissions shall include the following:

- ☒ If manufacturer data are used, include specifications for emissions units and control equipment, including control efficiencies specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect normal operation.
- ☐ If test data are used, include a copy of the complete test report. If the test data are for an emissions unit other than the one being permitted, the emission units must be identical. Test data may not be used if any difference in operating conditions of the unit being permitted and the unit represented in the test report significantly effect emission rates.
- ☒ If the most current copy of AP-42 is used, reference the section and date located at the bottom of the page. Include a copy of the page containing the emissions factors, and clearly mark the factors used in the calculations.
- ☐ If an older version of AP-42 is used, include a complete copy of the section.
- ☐ If an EPA document or other material is referenced, include a complete copy.
- ☐ Fuel specifications sheet.
- ☐ If computer models are used to estimate emissions, include an input summary (if available) and a detailed report, and a disk containing the input file(s) used to run the model. For tank-flashing emissions, include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., permit or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis.

1. Technical Specification Sheet and Equipment and Components Description from Sellers Manufacturing Co. Literature
2. Vendor Emission Factors for CO, NOx (with Low NOx Control), and PM provided by Sellers Manufacturing Co. Written Statement
3. Manufacturer's Data Report and Factory Test Report showing emissions at different loads for both boilers from Sellers Manufacturing Co.
4. AP 42, Fifth Edition, Volume I, Chapter 1: External Combustion Sources, 1.4 Natural Gas Combustion, Final Section - Supplement D, July 1998

1. Technical Specification Sheet and Equipment and Components Description from Sellers Manufacturing Co. Literature

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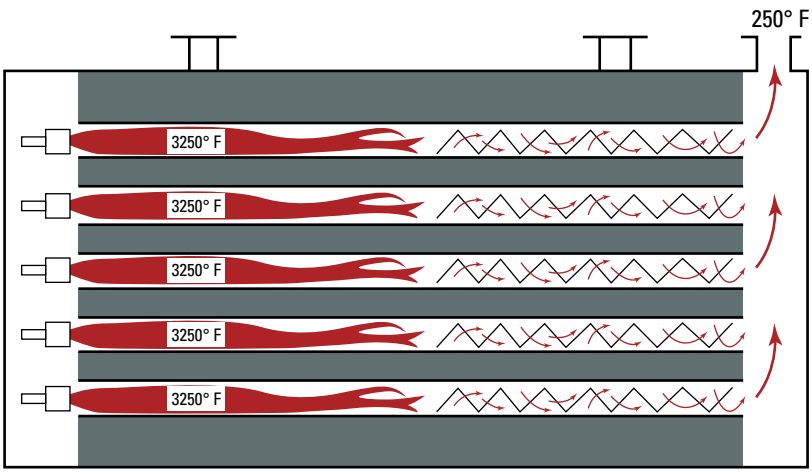
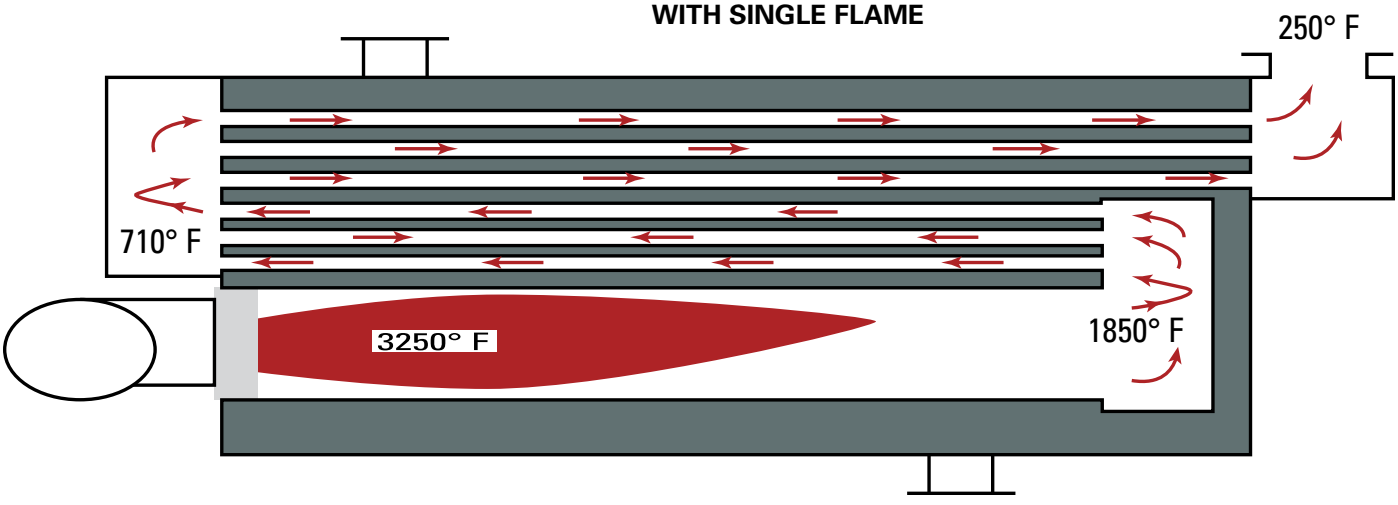
- No Thermal Shock = No Warmup Period = Fuel Savings.
- No Refractory = Reduced Maintenance = Low Cost of Ownership.
- Industry Leading Burner & Pressure Vessel Warranty

SELLERS INNOVATIVE SINGLE PASS BOILER DESIGN WITH MULTIPLE FLAMES



TYPICAL 3-PASS SCOTCH MARINE BOILER WITH SINGLE FLAME



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HOT WATER BOILER RATINGS, CAPACITIES, WEIGHTS

BOILER HORSE POWER	HOURLY GAS INPUT (1000BTU)	GROSS HOURLY OUTPUT	TURN-DOWN	FUEL OPTIONS	LOW NO_x EMISSIONS OPTION	WATER CAPACITY (U.S. GAL)	WATER CAPACITY (POUNDS)	SHIPPING WEIGHT (POUNDS)	
								100PSI	150 PSI
40	1,674	1,339	3 to 1	NG, LP	30 PPM	139	1,161	2,680	2,680
50	2,092	1,674	3 to 1	NG, LP	30 PPM	224	1,872	3,260	3,260
60	2,511	2,009	3 to 1	NG, LP	30 PPM	219	1,826	3,360	3,360
70	2,929	2,343	3 to 1	NG, LP	30 PPM	213	1,779	3,450	3,450
80	3,348	2,678	3 to 1	NG, LP	30 PPM	319	2,659	4,250	4,330
100	4,184	3,348	3 to 1	NG, LP	30 PPM	307	2,565	4,470	4,470
125	5,231	4,184	3 to 1	NG, LP	30 PPM	424	3,539	5,590	5,860
150	6,277	5,021	3 to 1	NG, LP	30 PPM	411	3,427	5,820	6,090
175	7,323	5,858	3 to 1	NG, LP	30 PPM	397	3,314	6,050	6,320
200	8,369	6,695	4 to 1	NG, LP	30 PPM	534	4,456	7,450	7,580
250	10,461	8,369	4 to 1	NG, LP	30 PPM	654	5,460	9,520	9,520
300	12,553	10,043	4 to 1	NG, LP	30 PPM	839	7,000	11,520	12,110
350	14,645	11,716	4 to 1	NG, LP	30 PPM	806	6,728	12,060	12,490
400	16,738	13,390	4 to 1	NG, LP	30 PPM	1,015	8,471	12,840	13,780
500	20,922	16,738	4 to 1	NG, LP	30 PPM	1,218	10,162	15,080	15,600
600	25,107	20,085	4 to 1	NG, LP	30 PPM	1,446	12,067	17,390	18,520
700	29,291	23,433	4 to 1	NG, LP	30 PPM	1,698	14,168	19,920	21,310
800	33,475	26,780	4 to 1	NG, LP	30 PPM	1,981	16,535	23,330	24,190
900	37,659	30,127	4 to 1	NG, LP	30 PPM	3,263	27,116	31,770	32,865

(1) High tempurature construction is available.
(2) Low NO_x may affect turn-down.

GAS REQUIREMENTS

Main and pilot gas pressure regulators are supplied with each boiler. Refer to the chart below for gas pressure requirements. Pressures shown are with the unit running.

BOILER HORSEPOWER	PRESSURE REQUIRED AT GAS TRAIN INLET
	STD RANGE
40-80	1 to 5 PSI
100-150	1 to 5 PSI
175-200	1 to 5 PSI
250	1 to 5 PSI
300-350	2 to 10 PSI
400-900	2 to 10 PSI

For high and low gas pressure applications consult the factory.

ELECTRICAL REQUIREMENTS

A single incoming power connection is required to the junction box provided at the hinge of all boilers. Boilers are wired for jobsite supply power characteristics.

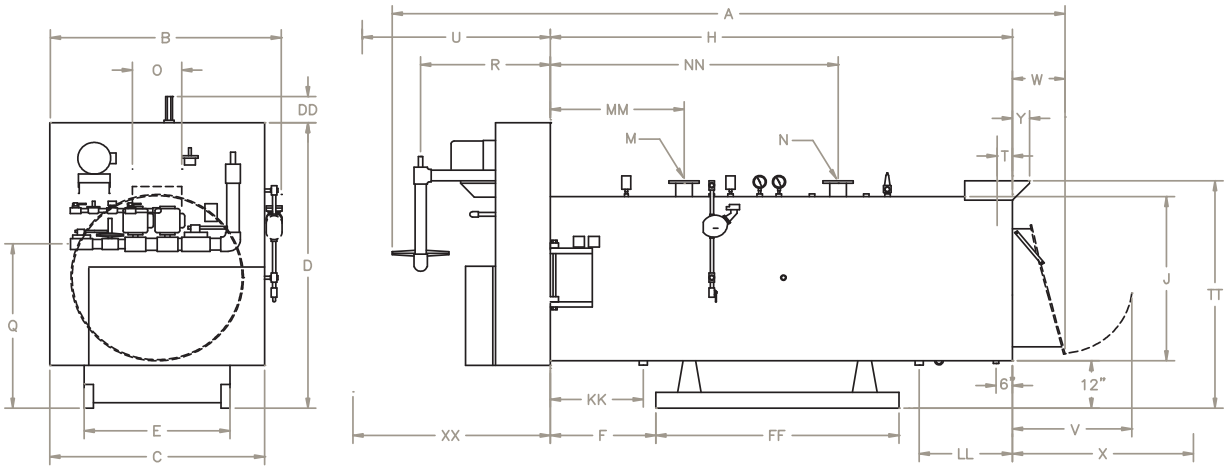
STACK REQUIREMENTS

Design stack to provide +/- .1 water column draft at flue outlet. Smooth transitions and bends are required. Maximum stack weight on boiler should be 1,000 pounds on 40 to 80 HP and 2000 pounds for 100 to 900 HP units.

AIR REQUIREMENTS

Provide 1/2 square foot of free air inlet area per 1,000,000 BTU input to the burner. Cross ventilation is preferred in lieu of a single opening.

Sellers Fits Where Others Won't



HOT WATER BOILER DIMENSIONS

HORSEPOWER		S-150-W	S-175-W	S-200-W	S-250-W	S-300-W	S-350-W	S-400-W	S-500-W	S-600-W	S-700-W	S-800-W
OVERALL DIMENSIONS:												
LENGTH	A	166	166	167	193	196	210	213	214	218	220	228
WIDTH	B	57	57	61	64	67	72	76	83	89	95	101
BURNER WIDTH	C	53	53	56	62	62	72	74	82	88	94	100
BURNER HEIGHT	D	73	73	82	80	87	97	102	107	112	120	125
SECONDARY AIR CAP HEIGHT	DD											
BASE:												
WIDTH	E	36	36	42	42	48	48	54	57	63	66	72
LOCATION	F	26	26	26	3	3	3	3	3	3	3	3
LENGTH	FF	60	60	60	104	104	104	104	104	104	104	104
SHELL:												
LENGTH	H	114	114	114	140	140	140	140	140	140	140	140
DIAMETER INSIDE	J	42	42	48	48	54	54	60	66	72	78	84
SHELL CONNECTIONS:												
DRAIN SIZE	K	1.5	1.5	2	2	2	2	2	2	2	2	2
DRAIN LOCATION	KK	22	22	22	34	34	34	34	34	34	34	34
MANUAL FILL SIZE	L	2	2	2	2	2	2	2	2	2	2	2
HOT WATER OUTLET SIZE (NOTE 3)	M	6f	6f	6f	8f	8f	8f	8f	10f	10f	10f	12f
HOT WATER OUTLET LOCATION	MM	33	33	33	36	36	36	36	36	36	36	36
HOT WATER RETURN SIZE (NOTE 3)	N	6f	6f	6f	8f	8f	8f	8f	10f	10f	10f	12f
HOT WATER RETURN LOCATION	NN	71	71	71	88	88	88	88	88	88	88	88
GAS CONNECTIONS:												
MAIN BURNER VALVE IPS (NOTE 5)	QQ	3	3	3	2.5	2.5	2.5	3	3	3	3	3
VERTICAL LOCATION (NOTE 11)	Q	38	38	41	44	48	48	48	48	48	48	48
HORIZONTAL LOCATION (NOTE 4)	R	32	32	32	34	34	48	50	50	50	50	56
PILOT BURNER VALVE IPS	S	0.75	0.75	0.75	0.75	1	1	1	1	1.25	1.25	1.25
FLUE CONNECTIONS:												
FLUE SIZE (NOTES 6 & 10)	O	16	18	18	20	22	24	26	28	32	34	36
FLUE LOCATION	T	3.75	2.75	2.75	5.75	4.5	3.5	2.5	1.5	-0.5	-1.5	-2.5
FLUE HEIGHT	TT	61	61	67	67	73	73	79	85	97	103	109
INSTALLATION CLEARANCES:												
COMBUSTION ASSEMBLY SWING	U	58	58	62	65	68	80	84	90	95	100	108
RELIEF DOOR SWING (NOTE 7)	V	29.5	29.5	35.5	35.5	40	40	43	46	50	48	50
TUBE REMOVAL, FRONT (NOTE 8)	XX	66	66	66	88	88	88	88	88	88	88	88
TUBE REMOVAL, REAR (NOTE 8)	X	72	72	72	90	90	90	90	90	90	90	90
RELIEF DOOR ASSEMBLY	VV	13	13	14	14	15	15	16	17	18	17	18
FLUE OUTLET PROJECTION	Y	4.25	6.25	6.25	4.25	8.5	10.5	12.5	14.5	18.5	20.5	22.5
BLOWER MOTOR:												
BLOWER HORSEPOWER		7.5	7.5	10	15	15	20	20	25	25	30	30
LOW NO_x BLOWERS		10	10	15	20	20	20	20	20	30	30	30

See Notes on Page 25.

NOTES

1. Dimensions are accurate for layout but are subject to change. Certified prints are available upon request.
2. Lifting lugs and insulation are not shown on drawing. The manhole, when furnished, is not shown.
3. Openings are threaded unless indicated:
   f = Class 150 ASA flange. F = Class 300 ASA flange.
   Threaded couplings project 2" or less.
4. Provide "R + 12" clearance from the right side of burner box to the right side wall to open hinged burner.
5. Gas train may change with gas type and pressure.
6. Outside diameter and dimensions are shown. (see note 10)
7. Provide "J + 7" clearance from the rear end of the shell to swing the hinged back plate on 300 HP and larger boilers.
8. Tubes may be removed from the front or rear.
9. Dip tube (2" min.) provided on hot water outlet.
10. Flue outlet dimension on larger boilers are inside diameter with angle iron flanged connection.
11. Horizontal gas train dimension will vary based on required gas train components and addition of Low NO_x option. Gas train may extend beyond burner manifold dimension C.

STANDARD EQUIPMENT FURNISHED

Pressure Vessel: 100 or 150 PSI, ASME stamped with "H"cloverleaf.

Manholes: Standard on 500 HP or larger boilers.

Handholes: Five (5) furnished, 3-1/2" x 4-1/2".

Lifting lugs: One or more provided on each boiler.

Energy X-tractors: High temperature stainless steel to provide high efficiency. Installed in each tube.

Insulation: 2" fiberglass with double painted steel jacket.

Relief Door: Gravity operated for rear access and safety.

Burner Assembly: Hinged to shell including:

- Fully modulating burner with parallel positioning controls.
- Individual burner nozzles.
- Air proving switch.
- Ignition transformer, spark and flame rods.
- Gas control trains with dual main shutoff cocks, pilot and main gas pressure regulators, gas volume adjustment and other components as follows:

Operating Temperature Control: Controls temperature.

High Limit Temperature Control: Manual reset limit control.

UL Labeled: Packaged boiler.

Low Water Cutoffs: MM150 S-M float type with manual reset.

Pressure Gauge: 4-1/2" dial type mounted on pigtail.

Temperature Gauge: 5" dial type.

Base: Heavy duty structural steel skid.

Relief Valve(s): ASME rated for full boiler nozzle output at design pressure rating.

Flame observation ports: Two or more provided in combustion chamber to view burners.

Control Panel: With motor starter, control transformer with primary and secondary fuses & indicating lights. Siemens LMV5 Microprocessor based burner management system with real time MODBUS communication.

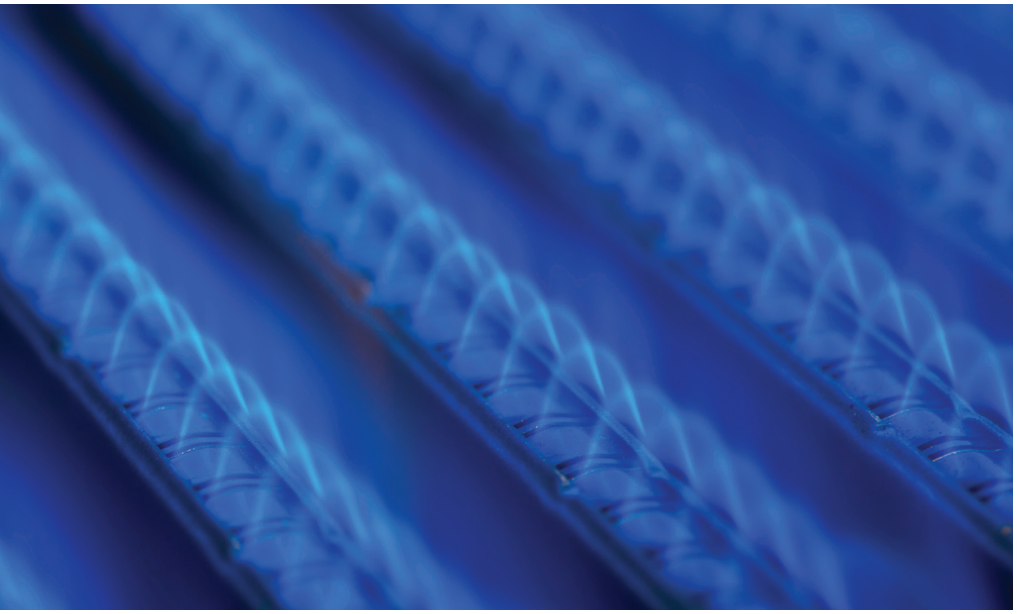
OPTIONAL AGENCY APPROVALS

- Factory Mutual
- CSD-1
- NFPA-85

SIEMENS

LMV5...
Linkageless Burner Management System

Combustion Controls



World-class products, support and performance

With the LMV5...Linkageless Burner Management System, Siemens delivers a fully integrated system that is not only easy to install and commission, but also provides improved burner performance and efficiency, while ensuring accuracy and safe operation.

Key features and benefits include:

- Integrated linkageless control, burner flame safeguard and modulation PID control
- Single and dual-fuel applications
- Controls up to six independent actuators for optimal efficiency in low NOx burner applications
- Integrated PID Temperature/Pressure Controller with auto tune for extremely accurate process control
- VFD control with actual motor RPM speed sensor provides reliable, efficient and safe control of the combustion air blower
- Integrated gas valve proving system checks for leaks on every burner cycle for increased safety
- Up to 15 programmable points for each fuel-air ratio curve providing greater flexibility and tighter control
- 900 highly repeatable actuator positions for precise control
- Digital positioning feedback from actuators ensure unmatched repeatability
- Independent ignition position provides reliable light off
- Annunciation of over 500 fault conditions permits quick, accurate troubleshooting
- World-wide approvals and technical support
- Optional O2 Trim for Standard (LMV52.2) and Ultra-Low NOx (LMV52.4) burner applications
- Optional Flue Gas Recirculation Hold based on Stack Temperature/Time for reliable light off and burner operation
- Adjustable Flame Failure Response Time

Fully integrated, easy-to-use HMI

Programming and commissioning of the LMV5 takes minutes, not days. Simply log in, select the programming option and define the specific parameters. It is that easy.

- User-friendly, menu system for fast programming and commissioning
- Quickly access and monitor the system at all times
- Real text annunciation of fault conditions for fast troubleshooting
- Multi-level password protection for added security
- Real-time ModBus communication

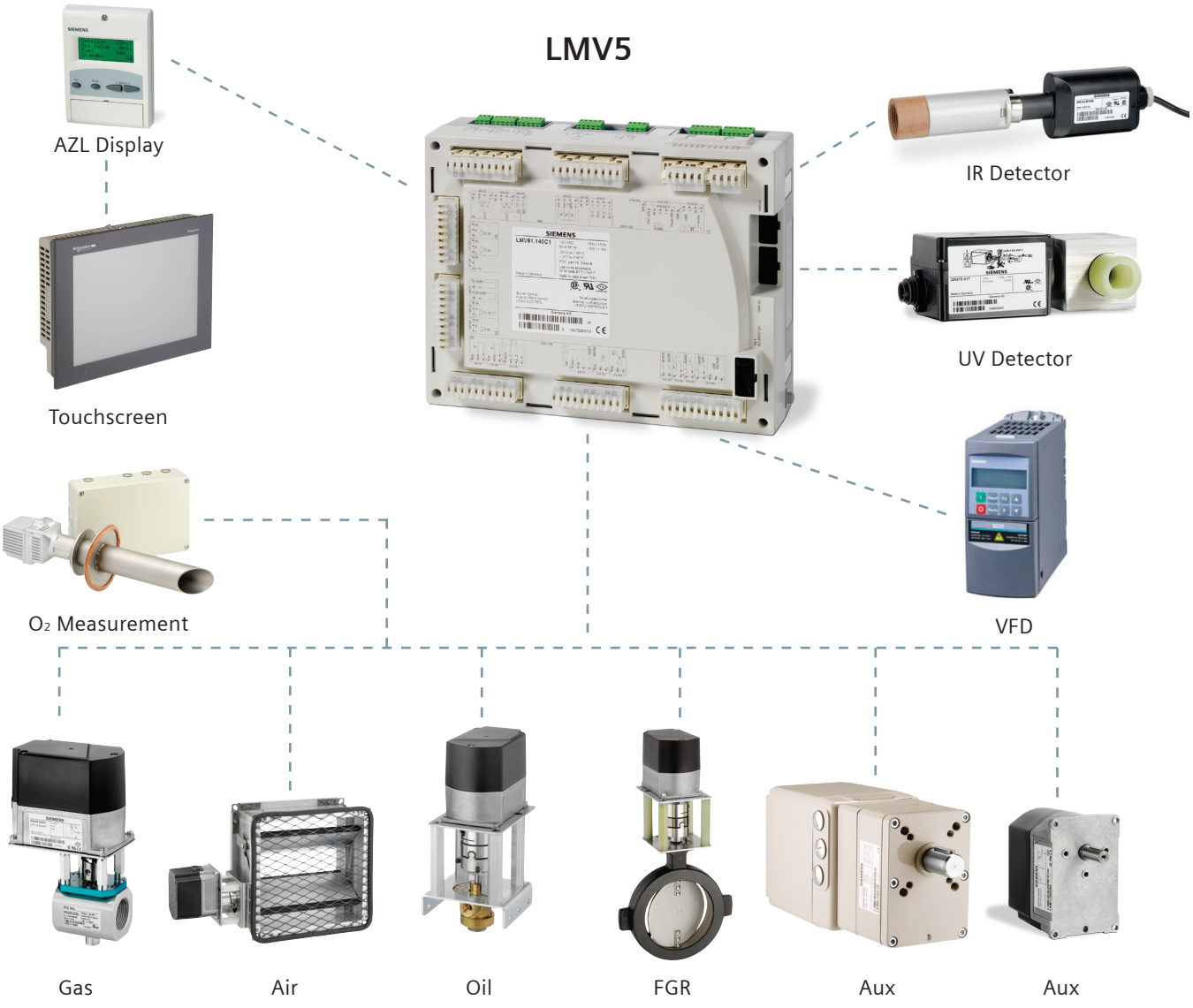
Accuracy is the key to control

Driven by a digital Can-Bus signal, the movement of the SQM4 actuator is accurate to 1/10th of one degree. A digital feedback signal ensures the correct position is maintained throughout the modulating range.

Accurate control ensures that the burner will always perform with repeatability and accuracy as well as within the recommended safety parameters.

Additional options for saving energy

High impact options including; O2 trim system, Variable Frequency Drive, Touchscreen and PC Commissioning Tool meet specific control needs, improve process control and reduce energy costs.



SCC Inc.

Technical Instructions

Document No. TS-1000

March 10, 2017

TS Series

TS… Touchscreen Kits
for use with LMV3, LMV5 and RWF… Controls

Touchscreen

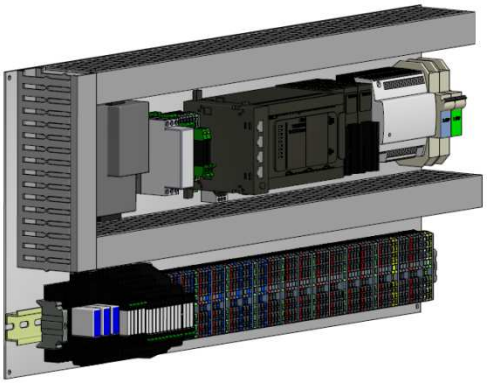


Plate Kit

Enclosure

Description

TS… series touchscreen kits provide a human machine interface (HMI) with a Siemens LMV3 or LMV5 linkageless control. Each kit provides data collection and trending for a hot water or steam boiler. An optional RWF55 control for load or water level modulation easily interfaces with TS… series touchscreen kit.

Each TS… touchscreen kit includes a 6” or 10” touchscreen along with a plate kit. The touchscreen and plate kit can be pre-mounted in an enclosure, or mounted by others in a control panel.

A PLC first-out annunciator provides additional analog, digital, temperature, and/or draft controls inputs and outputs.

Flexible communication interface options to the building management system (BMS) provide streamlined data collection, monitoring and control.

Features

- Local touchscreen interface with Siemens LMV/RWF controllers
- Schneider touchscreens available in 6”or 10”
- Boiler graphics and field tag information are field-configured
- LMV… static, fuel and internal lockout and error history displayed
- Fuel-air ratio control curve displayed
- Alarm history stored for most recent 250 faults/alarms
- Detailed annunciation of LMV… digital inputs and outputs
- Remote setpoint, firing rate and/or enable of the LMV… or RWF… via BMS
- Water level control option and status via RWF55
- Metric or Standard units displayed
- English or Spanish languages
- Clear English or Spanish text for alarms
- Circulating pump/isolation valve control outputs for hydronic boilers (option with expanded annunciator)
- Expanded annunciator options include:
    - Four (4) analog inputs with field configurable label, span and type (0-10V, 2-10V, 0-20mA or 4-20mA), low and high alarm setpoints, with auto or manual reset. Totalization available per minute or per hour.
    - Four (4) Pt1000 (or Pt100) RTD temperature inputs with field configurable label, low and high alarm setpoints, with auto or manual reset.
    - Two (2) analog outputs with field configurable span and type (0-10V, 2-10V, 0- 20mA or 4-20mA); low and high alarm setpoints, with auto or manual reset. Totalization available per minute or per hour.
    - Two (2) digital outputs with field configurable logic, including on and off delays. Manual or automatic reset.
    - First-out annunciation option, including thirteen (13) 120 VAC inputs with field labeling capability
    - Eight (8) selectable data logging variables stored in CSV format on USB drive
    - Four (4) selectable variables for trending up to 7 days
    - Economizer temperature monitoring, (additional RTD card with four (4) inputs)
    - Draft control using SCC Inc. SQM5… actuator
    - Connection of two additional RWF55 controllers
    - Variable Speed Drive information and setup when preprogrammed VFD (Yaskawa) provided by SCC Inc.

- Screen saver with PV, setpoint, demand and status
- Standard Modbus TCP/IP to BMS communications
    - Additional BMS communication options available
- Email communications and text messaging for up to six (6) recipients including alarms, faults and screen shots (screen shot viewer via USB)
- Remote monitoring via Smart Phone or tablet
- Compatible with SCC Master Panel Lead Lag system

Application

TS… touchscreen kits are suited for hydronic boiler, steam boiler, and other applications utilizing an LMV3 or LMV5 linkageless control system.

Components

All TS… touchscreen kits include the following components:

- 6” or 10” touchscreen
- Plate kit including power supply and branch circuit protection
- Cables for quick connections between the plate kit, touchscreen, and LMV… system
- Interconnect terminals for field wiring

The following optional features are available:

- Draft Control
- Annunciation Options Including:
    - 13 digital 120 VAC alarm annunciation inputs.
    - 4 analog inputs (0-20mA - 4-20ma - 0-10V - or 2-10V)
    - 2 analog outputs (0-20mA - 4-20ma - 0-10V - or 2-10V)
    - 4 Pt100/Pt1000 RTD inputs for general purpose
    - 4 Pt100/Pt1000 RTD inputs for monitoring economizer temperatures
    - 5 output Relays for:
        - Starting circulating pump on Hot water boilers
        - Monitoring a digital value (2 outputs)
        - Annunciation alarms
        - PLC normal operation indication
- BMS communication other than standard Modbus
- Open plate kit, or in enclosure

Product Part Numbers

TS - 0 D 8 B - 2 5 W

Touchscreen

Touchscreen Size

6 = 6" touchscreen
0 = 10" touchscreen
F = 6" touchscreen mounted > 15 ft away from AZL (LMV5 only)
J = 10" touchscreen mounted > 15 ft away from AZL (LMV5 only)

Draft Control

X = No draft control included
D = Draft control included with annunciation option 5 below
E = Draft control included with annunciation option 8 below

Annunciation and Monitoring Options

X = No PLC and annunciation inputs
1 = Standard annunciation, 13 120VAC inputs
2 = 13 120VAC annunciation inputs and 4 analog inputs
3 = 13 120 VAC annunciation inputs and 4 RTD 100/1000 Ohm inputs
4 = 13 120 VAC annunciation inputs, 4 RTD 100/1000 Ohm inputs dedicated for Economizer
5 = 13 120 VAC annunciation inputs, 4 analog inputs, and 4 RTD 100/1000 Ohm inputs
6 = 13 120 VAC annunciation inputs, 4 analog inputs, and 4 100/1000 Ohm RTD inputs dedicated for economizer
7 = 13 120 VAC annunciations, 4 RTD 100/1000 Ohm RTD, and 4 RTD 100/1000 Ohm inputs dedicated for economizer
8 = 13 120 VAC annunciation inputs, 4 analog inputs, 4 RTD 100/1000 Ohm RTD, and 4 RTD 100/1000 Ohm inputs dedicated for economizer

Building Management Interface (BMS)

S = Standard, Modbus TCP/IP
B = BACnet / IP,
M = BACnet MS/TP, Modbus RTU, Metasys N3
L = LonWorks
N = Profinet
P = Profibus

Enclosure Option

X = No - din rail kit on plate to be mounted into enclosure (Mounted by others)
1 = NEMA 1
2 = NEMA 12, includes cover over tocuhscreen and AZL/RWF (if applicable)
4 = NEMA 4X (indoor), includes cover over AZL/RWF (if applicable)
A = NEMA 1 with cooling fan
B = NEMA 12 with cooling fan, includes cover over tocuhscreen and AZL/RWF and fan (if applicable)
C = NEMA 4X with cooling fan, includes cover over tocuhscreen and AZL/RWF and fan (if applicable)

AZL (Option only with enclosure)

X = No AZL included (Must be selected with din rail kit on plate)
3 = AZL23.00A9 mounted to front of enclosure
5 = AZL52.40B1 mounted to front of enclosure

RWF (Option only with enclosure)

X = No RWF included
L = RWF55.50A9 for external load control
W = RWF55.50A9 for water level control with transformer
2 = (2) RWF55.50A9 for external load control and water level control - includes 1 transformer

Specifications

		6” TS kit	10” TS kit
Physical characteristics	Main power	110-240 VAC	110-240 VAC
	Frequency	60-50 Hz	60-50 Hz
	Touchscreen power	24 VDC	24 VDC
	Power consumption	≤ 205 W	≤ 205 W
	Power consumption with PLC annunciation	≤ 460 W	≤ 460 W
	Dry contacts	2 Amps	2 Amps
Operating environment	Operating temperature	32 to 122 °F [0 to 50 °C]	32 to 131 °F [0 to 55 °C]
	Humidity	Max. 80% with no condensation	Max. 85% with no condensation
	NEMA rating	4X (indoor use)	4X (indoor use)
	Enclosure option	NEMA 1	NEMA 1
		NEMA 12 (Optional) NEMA 4X (Optional)	NEMA 12 (Optional) NEMA 4X (Optional)

20446-1

TERMINAL BLOCK LAYOUT

Terminal Block Legend:
Jumper
Black Terminal Block = 120v AC Line
Red Terminal Block = 120v AC Control
White Terminal Block = 120v AC Neutral
Orange Terminal Block = 120v AC Neutral
Green Terminal Block = Ground

Three Phase Power Input (Provided by others)

Branch Circuit Disconnect

Control Transformer

Primary Fuses

Primary

Secondary

Control Fuse

To: 120V AC To 240V AC Transformer

To: Touchscreen Power Supply

Jumped

Emergency Stop

BOX JUNCTION (LOCATED ON HINGE SIDE OF BOILER)

LOW WATER CUT-OFF

BLU

YEL

ORA

LOW WATER CUTOFF

HIGH LIMIT

ALARM

ALARM

JUMPED

BLOWER PROVEN AIR SWITCH

BLU/WHT

PUR

BRAKING RESISTOR ENCLOSURE

MOTOR SPEED INPUT

VARIABLE SPEED DRIVE

SHIELD

SHIELD

BRN

JUMPED

JUMPED

JUMPED

LOW GAS

HIGH GAS

PROOF OF CLOSURE

PUR

RED

ON/OFF SWITCH

PUR

CALL FOR HEAT

IGNITION TRANSFORMER

RESET PUSH BUTTON

BURNER ON

FRR RELAY 2

PILOT GAS VALVE

BRN/WHT

CONT PILOT RELAY 1

CONT PILOT R1

JUMPED

UPSTREAM GAS VALVE

NORMALLY OPEN VENT VALVE

DOWNSTREAM GAS VALVE

BRN/WHT

BRN

JUMPED

**TERMINAL BLOCKS 31, 32 SPARE

INCOMING LINE POWER

INCOMING NEUTRAL

INCOMING GROUND

SAFETY LOOP POWER

SAFETY LOOP INPUT

ALARM HORN

AIR SWITCH

LOW GAS INPUT

HIGH GAS INPUT

PROOF OF CLOSURE

BURNER ENABLE

GAS PILOT VALVE

GAS MAIN DOWNSTREAM VALVE

GAS MAIN UPSTREAM VALVE

To: Touchscreen Modbus 485

BLOWER MOTOR

SPEED SENSOR

VFD ENCLOSURE

VFD

L1 L2 L3 B1 B2 S3 SN S1 A2 AC SC SP G R+ R- IG T3 T2 T1

Jumped

Sellers® MANUFACTURING CO.
918 WEST WALNUT STREET
DANVILLE, KY 40422
PHONE: (859) 236-3181
FAX: (859) 236-3184

S SERIES

WITH LMV51

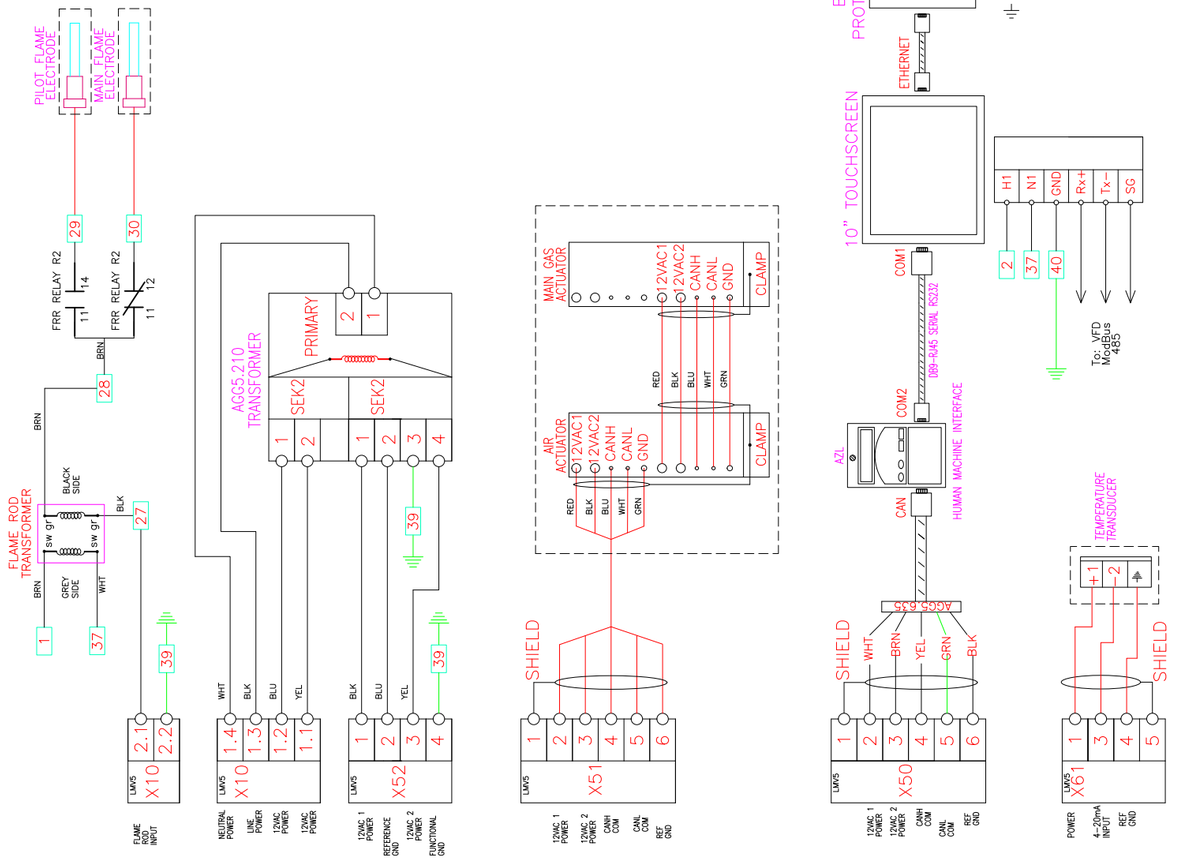
WIRING DIAGRAM

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
FRACTIONS ± 1/32
X.XX ± .015
X.XXX ± .005
ANGLES ± 1°
DO NOT SCALE DRAWING

REV.	DATE:	DESCRIPTION OF CHANGE	DRAWN:	APPROVED:

DRAWN BY: M. Bradley
DATE: 2/19/2021
APPROVED BY:
DATE:
WEIGHT: N/A
MATERIAL: N/A
FINISH: N/A
DWG SIZE: N/A
SCALE: ——
SHEET: 01 of 02
DRAWING NUMBER: B-21-1032
REV.

REF: 20543



LEGEND

COLOR	ABBREVIATION
BLK	=BLACK
BLU	=BLUE
BLU/WHT	=BLUE, WHITE STRIPE
BRN	=BROWN
BRN/WHT	=BROWN, WHITE STRIPE
GRN	=GREEN
GRY	=GREY
GRY/BLK	=GREY, BLACK STRIPE
GRY/RED	=GREY, RED STRIPE
ORA	=ORANGE
ORA/WHT	=ORANGE, WHITE STRIPE
PUR	=PURPLE
RED	=RED
RED/WHT	=RED, WHITE STRIPE
WHT	=WHITE
YEL	=YELLOW
YEL/WHT	=YELLOW, WHITE STRIPE

– DEVICE ON BOILER

– SEPARATE ENCLOSURE

– SIDE ENCLOSURE TERMINAL BLOCK

– CONTROL ENCLOSURE TERMINAL BLOCK

NOTES:
1. GROUNDS ARE GROUNDED THROUGH TERMINAL BLOCK TO DIN RAIL TO ENCLOSURE

REV.	DATE:	DESCRIPTION OF CHANGE	DRAWN:	APPROVED:

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
FRACTIONS ± 1/32
X.XX ± .015
X.XXX ± .005
ANGLES ± 1°
DO NOT SCALE DRAWING

WEIGHT: N/A
MATERIAL: N/A
FINISH: N/A
DWG SIZE: N/A
SCALE: ——

Sellers® MANUFACTURING CO.
918 WEST WALNUT STREET
DANVILLE, KY 40422
PHONE: (859) 236–3181
FAX: (859) 236–3184

S SERIES
WITH LMV51

WIRING DIAGRAM

DRAWN BY: M. Bradley
DATE: 2/19/2021
APPROVED BY:
DATE:
SHEET: 02 of 02
DRAWING NUMBER: B–21–1032
REV.

SELLERS BOILER, S-SERIES

2. EQUIPMENT AND COMPONENT DESCRIPTION

2.1. General Description

The Sellers "S" Series boiler is a packaged Firetube Boiler with an integral burner manufactured by Sellers Manufacturing Company. It is intended for commercial heating and process applications, and is offered as a hot water or steam boiler in sizes from 40 HP to 800 HP.

The burner is a pre-mix type that fires natural gas, LP, digester gas and other gases. It is a modulating burner. The burner is also offered with an optional low NOx firing for emission levels of 30 ppm or lower (corrected to 3% O2). The burner and boiler package is listed by Underwriters Laboratories (UL) from 40 to 400 HP.

The boiler and burner are pre-assembled and shipped as a packaged unit, and include the gas train, combustion air fan, burner controls, vessel controls, safety valves and many other components as listed below. The boiler is test fired at the factory, and the results of that test firing are recorded on the "Fire Test Sheet" which is included in the manual.

The standard boiler is provided with a Siemens LMV 5 Parallel positioning control which uses servo motors to modulate the air damper, fuel valve and in some cases, the secondary air valve as required for modulation from the minimum to the maximum firing rates. Options are available for linkage control, ratio relay controls and other combustion control systems. Details on the control systems are provided in separate manuals.

The burner uses a ribbon pilot, which provides a small pilot under each nozzle. The pilot ribbon runs across the burner front as well as up and down the burner front. At pilot ignition, a spark ignites the ribbon pilot at one end, and this flame spreads across the burner face to the far corner, where the flame is proven by a flame rod. On main flame, a flame rod on one of the nozzles is used to prove that the main flame is established. The pilot remains on as long as the burner is on, and cycles off when the burner turns off.

The Sellers "S" Series boiler has several unique differences from conventional Firetube boiler. The primary difference is that the vessel is a single pass boiler (no furnace) and individual burners firing into the 2" tubes in the vessel. This means no furnace or turnaround chamber. There is also no refractory or baffles to direct flue gases.

Because there is no furnace that will grow at a different rate from the tubes in the other passes, there is no thermal shock. Every tube inside the vessel receives the same heat input and has exactly the same growth, so there is no uneven heating to cause thermal stress. The "S" Series boiler can be operated at high firing rates immediately after startup, and the "X" series (On-Off firing) Immersion Firetube boilers have been doing this for many decades.

The following is a list of the main components used in the S Series boiler and a description of their function.

2.2. Standard Components

1. Burner Assembly – An assembly of the components required to provide the fuel and air for combustion, and the controls to provide safe light-off and control of the combustion process. A more detailed explanation of the internals of the burner is covered at the end of this section. Some of the vessel controls are also included in the burner controls.

2. Blower Motor - Drives blower fan to provide the air required for combustion. All motors are 3500 RPM. An open drip-proof (ODP) style motor is provided as a standard offering, but other versions are available as options. A totally enclosed fan cooled (TEFC) motor would typically be used for dirty or outside environments.

3. Air Proving Switch – This is a safety interlock switch that measures the pressure developed by the combustion air fan, and opens if that pressure drops below its setting. It prevents the ignition sequence or shuts off the burner under conditions of insufficient combustion air pressure. (automatic reset device)

4. Pilot Shutoff Cock – A ball valve that is used to manually control the pilot gas volume or isolate the pilot gas flow. The actual adjustment of the pilot gas flow is done by adjusting the pilot gas pressure regulator (item

5. Pilot Gas Pressure Regulator – A manually adjusted pressure regulating valve that provides a constant gas pressure to the pilot. It is the primary means of controlling the pilot gas flow.

6. Automatic Pilot Gas Valve – Solenoid valve(s) that automatically control pilot gas supply in response to burner operation through the flame safeguard sequence. The pilot remains on through the main flame operation in addition to the pilot proving period.

7. Main Gas Shutoff Cock – A manual valve used to isolate the main gas supply to the burner assembly. (Installed upstream of main gas train components).

8. Main Gas Pressure Regulating Valve – A manually adjusted pressure reducing valve that provides a constant gas pressure to the main burner. In some cases, this is built into the Safety Shutoff Valve; otherwise it would be located in front of the Safety Shutoff Valve(s).

9. Safety Shutoff Valve(s) – Electric valve(s) (can be motor and/or solenoid) that control gas supply to the main burner in response to the operating sequence of the controls, including the flame safeguard. They can also be integrated into the gas pressure regulator as show as item #8.

10. Low Gas Pressure Switch (if provided) – A gas pressure switch that prevents the operation of burner in the event of unsafe low gas supply pressure. This is a manual reset device which requires that the rest button be pressed to allow the switch to re-start and allow the burner to operate.

11. High Gas Pressure Switch (if provided) – A gas pressure switch that prevents the operation of burner in the event of unsafe high gas supply pressure. This is a manual reset device which requires that the rest button be pressed to allow the switch to re-start and allow the burner to operate.

12. Normally Open Vent Valve (if provided) - Provides unrestricted vent to atmosphere between dual main automatic safety gas valves when burner is off. (not pictured) This is not normally used with propane (or LP) because it is heavier than air and will tend to pool at a low point which could explode.

13. Leakage Gas Shutoff Cock - Manually controls main gas supply to the burner assembly. This valve is also sometimes called the safety valve because it is used to manually control gas flow on initial startup, and quickly shut off gas flow if combustion is not correct. It is also allowing for manual leak testing of automatic safety gas valves. (Installed down stream of last automatic safety gas valve.)

14. Gas Control Valve and Servo – A combination of a butterfly control valve and a servo motor that modulates the valve to control the volume of gas to the main burner. This valve is controlled in combination with the air damper to provide the correct fuel-air-ratio to the burner nozzle. The butterfly control valve is sized for the specific application, based on the flow rate and available pressure.

15. Combustion Air Damper and Servo – A combination of a modulating air control box that changes the volume of total air supplied to the burner and a servo motor that positions the damper. The servo is controlled in combination with the fuel valve to provide the correct fuel-air-ratio to the burner nozzle.

16. Secondary Air Adjustment(s) - A manual adjustment (and lock) for controlling the secondary air. (On smaller boilers, a single adjustment may be mounted on top of the burner assembly. This will change how much air is used in the primary air and how much in the secondary air flow.

17. Control Panel - Houses and protects electrical controls and wiring and provides terminals for wiring connections. See details below.

18. Manufacturers Nameplate (not shown)- Provides identification and rating information specific to the boiler, see Section 1.2.

19. Flame Safeguard and Combustion Control – The Flame safeguard provides and controls safe sequence of the burner and inter-related operating and safety controls. The combustion control provides the physical control of the fuel and air flow rates from low fire to high fire and through modulation. The unit shown contains both controls in a single package, but other products can have individual controls.

20. Control Circuit Transformer - Converts primary electric supply voltage to 120-60-1 phase for the boiler control circuit.

21. Blower Motor Starter – A relay that provides on-off control of the blower motor in response to flame safeguard sequence.

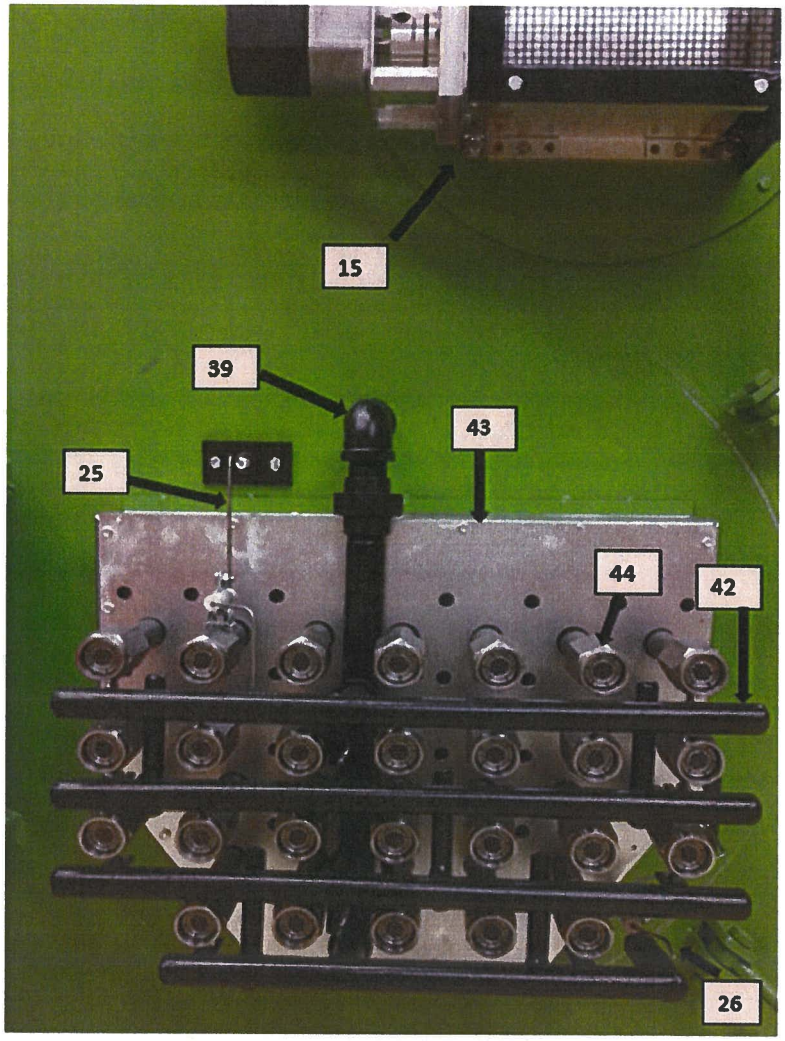


Figure 2-2 Burner

22. On-Off Control Switch - Provides manual on-off control of the boiler (sometimes called safe start switch).

23. Indicating Lights - Provides visual signal to verify current operating status of boiler.

24. Ignition Transformer - Provides high voltage electric output to ignition electrode for safe ignition.

25. Ignition Electrode - Provides spark for safe pilot ignition.

26. Pilot Flame Proving Electrode - Senses presence and proper location of the pilot flame for safe main burner ignition. The proving rod is opposite the ignition electrode, so that the pilot must ignite across the full burner face to prove all of the pilots have ignited.

27. Main Flame Proving Electrode - Senses presence of main burner flame in proper position for safe main burner operation. (Not furnished on boilers less than 60 HP.) (not pictured - same as 26 but located on main burner nozzle)

28. Structural Steel Base - Supports entire boiler for handling and rigging, and evenly distributes boiler weight.

29. Lifting Eyes – Connection points for lifting the boiler. See Section 3 for details.

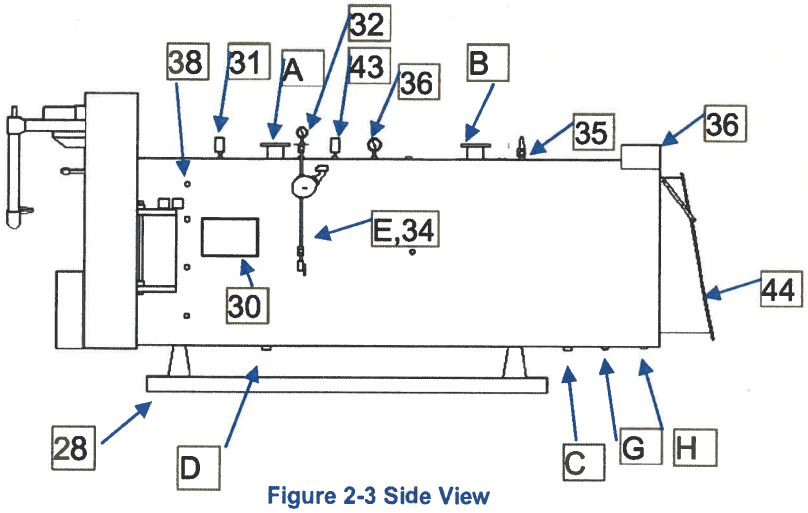


Figure 2-3 Side View

30. Electrical Supply Junction Box - Provides convenient primary electrical supply connection to the boiler.

31. High Limit Temperature Control – A manual reset temperature switch that monitors the water temperature and will shut down the boiler if that temperature is exceeded. Once the switch is tripped, it must be manually reset to allow the burner to operate. The set temperature is adjustable.

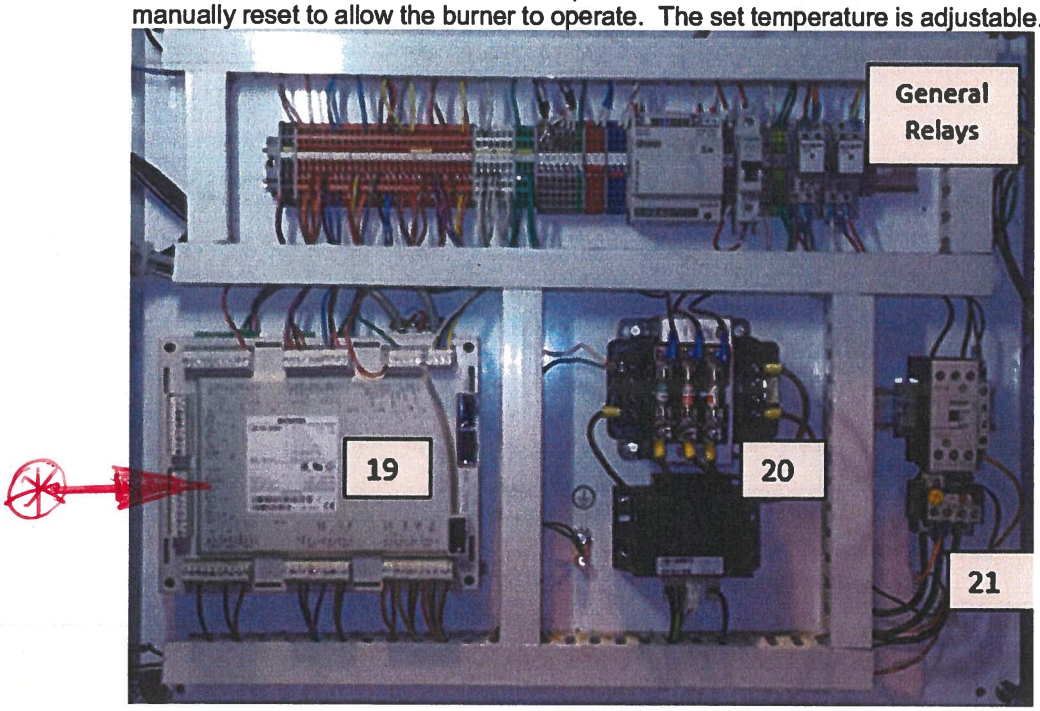


Figure 2-4 Control Panel

32. Pressure Gauge - Provides visual verification of boiler operating pressure.

33. Water Gauge Set – Provides visual indication of the water level in the water column and the boiler shell.

34. Low Water Cutoff – (LWCO) Prevents operation of burner assembly in the event of unsafe water level condition. (manual reset device). The LWO can be a float controlled switch (as shown) or an electronic control mounted in the center of the vessel.

35. Relief Valve(s) - Relieves internal pressure in boiler in the event component failures allow unsafe pressure condition to develop. Once the boiler is installed, they should be piped to a safe point of discharge (see Section 3 for details).

36. Stack Outlet - A round stack connection is provided at the rear of the boiler for connection to the stack or breeching. The maximum stack weight that can be supported by the boiler is 1000 pounds on boilers up to 80 HP and 2000 pounds on boilers larger than 80 HP. See Section 3 for other design considerations for stacks and breechings.

37. Blast Shield (Optional) - Provides adequate space around the relief door prohibiting anyone from being in the range of motion of the relief door in case it was to open and relieve pressure due to a combustion explosion.

38. Combustion Sight Glass - Provides for visual inspection of pilot and main burner condition. There are several sight glasses (more on larger units) to visually inspect the pilot and main flame combustion.

39. Pilot Gas Header – Delivers pilot gas to the runner pilots.

40. Runner Pilots – Provides ribbon flame below all main burner nozzles for ignition. This pilot remains on during the burner firing.

41. Secondary Air Box – A pressurized box that has numerous small holes for uniform distribution of secondary air to the pilots and main flames.

42. Main Burner Nozzles – Flame retention type nozzles deliver pre-mixed air and gas across runner pilots and into the fire tubes for combustion.

Figure 2- 5 Relief Door

43. Temperature Sensor – Provides a signal to control the burner On-Off cycling and modulating firing rate in response to load changes. See Section 5 for details.

44. Relief Door – A combustion relief door is provided at the rear of the unit. It provides a relief opening in the event of a combustion explosion. The room layout should allow an open space behind this door that will not expose individuals to this area in the rare case that it may open and release hot gases. The door has a gasket seal that must be maintained to provide a tight seal and prevent air from entering, which would result in a false high excess oxygen reading. This is especially true if oxygen trim unit is used for combustion tuning, and if there is a high negative draft that would pull in more air.

2.3. Standard Boiler Openings

A. Heating water supply – Opening from the boiler to the heating system

B. Heating water return – opening to the boiler for return water circulating from the heating system.

C. Manual Fill Connection - opening to boiler for fresh make-up water or manual fill.

D. Blowdown /Drain - Opening for blowdown or complete draining of boiler.

E. Float type water column blowdown/drain connection – Opening for float type low water level blowdown and/or drain.

F. Manhole opening (if supplied) – Full sized opening for access to the water side of the boiler for inspection and cleaning

G. Handhole opening(s) – Small openings for access to water side of boiler for inspection and cleaning

H. Rear Condensate Drain - Opening for draining initial condensation of water vapor from flue gases out of rear of boiler.

⚠ WARNING

DO NOT ATTEMP TO FIRE THE UNIT AT A LOWER FIRING RATE THEN STATED ON THE FIRETEST REPORT. VERY LOW RATES MAY CAUSE COMBUSTION PULSATION, CAUSING THE STACK OR OTHER EQUIPMENT DAMAGE. THIS IN TURN CAN CAUSE PERSONAL INJURY AND DEATH.

The primary combustion adjustment is the fuel-air-ratio. A calibrated combustion analyzer is required to set combustion. It should be capable of measuring O_2, CO and NO_x. The normal excess ranges (% O_2) for the burner vary with operation as a low NOx (30 ppm) burner or a standard Burner;

% Rate	Standard Burner Settings, % O2	Low NOx (30 ppm) Settings, % O2
> 50%	2.5 - 4.5%	3.5 - 5.5%
30 - 50%	3.5 - 5.5%	4.0 - 6.0%
< 30%	4.0 – 6.5%	4.5 - 6.5%

Table 7.1 Typical %0_2 Levels

When adjusting the burner for operation at low NOx (30 ppm corrected to 3% O2), the burner generally will require a higher O2 setting to obtain the lower NOx level. The higher % O2 (excess air) is required to cool the flame to achieve the lower NOx levels. These higher % O2 levels are normal for lower firing rates, but not for higher firing rates. In addition, the amount of secondary air will need to be adjusted to a minimum or lower level (valve adjusted to amore closed position) to obtain the NOx settings without operating at high levels of excess air. Increasing either the primary or secondary air will result in higher % O2 readings, but only increasing the primary air will result in lower NOx. If the secondary air setting is too high, the burner will be operating at a lower efficiency and may not make capacity.

7.4. Secondary Air

The secondary air adjustment is done primarily by trial and error adjustment. The purpose of the secondary air is to provide air for the pilot and to provide some air flow around the individual flames to prevent contact and disturbance with the tube, which would result in combustion noise. One setting can be used for all firing rates, but it may take some trial and errors adjustment to determine this best setting.

To increase the amount of secondary air to the unit, you spin the rod counter clockwise. And to decrease the amount of secondary air you spin the rod clockwise. The locking nut must be properly tightened after desired air is achieved to prevent it from changing over time.

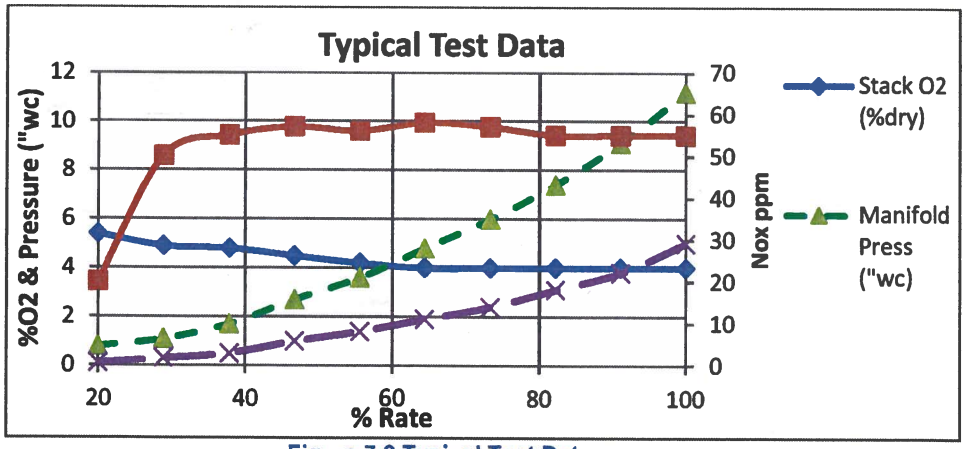


Figure 7.2 Typical Test Data

If the secondary air is adjusted to a point of too little air, the pilot flame will disappear (the visual blue flame will become transparent) and at some point, combustion noise will occur. It is OK for the pilot to become transparent, but do not adjust close to the point of where the combustion noise occurs. If the secondary air is adjusted to a point of too much air, the %O2 will increase (which may be OK if it remains in the normal operating range) and at some point, the combustion noise will occur, which is not acceptable. In addition to adjusting to prevent combustion noise,

2. Vendor Emission Factors for CO, NOx (with Low NOx Control), and PM provided by Sellers Manufacturing Co. Written Statement

Sellers® MANUFACTURING CO.

June 29, 2023

James Cooke & Hobson
4210 Hawkins Street NE
Albuquerque, NM 87109

Attn: Chuck Espinosa

Re: Los Alamos National Lab 99031
30 PPM Low NOx Burner

To Whom it may Concern;

The Burners/Boilers furnished on the above reference project will be provided to operate at 30 PPM Low NOx and will be Immersion Style with the following emission factors.

	PPM	Lbs / MM btu
Carbon Dioxide	NA	117
Water Vapor (H20)	NA	95.2
Carbon Monoxide	50	0.037
Oxides of Nitrogen	30	0.036
Hydrocarbons	14.5	0.0058
Particulates (filterable)	NA	0.0062
Particulates (condensable)	NA	0.0075

All factors are referenced at 3% O2 in flue gas

Please feel free to contact me if you need any additional information.

Respectfully,

Rick Liles

National Sales Manager
Sellers Manufacturing
918 West Walnut Street
Danville, KY 40422

3. Manufacturer's Data Report and Factory Test Report showing emissions at different loads for both boilers from Sellers Manufacturing Co.

Sellers®

MANUFACTURING CO.

OWNERS MANUAL

Model Number: S-200-W S-SERIES

S.O. Number: 106110A

Owner: LOS ALAMOS NATIONAL LABS

Location: LOS ALAMOS, NM

Authorized Representative: JAMES, COOKE & HOBSON

Phone Number: 505-344-7100

P.O. Number: 152726

Service Company:

Manual Delivered To: JAMES RROMERO

Date: 9/29/2023

Copies of the ASME data report, factory fire test report, as built wiring diagram, packing list, warranty (if applicable) and other miscellaneous information is contained in this manual.

918 W. Walnut St. • Danville, KY 40422 • Phone: (859) 236-3181 • Fax: (859) 236-3184 • www.sellersmfg.com

106110A
SO#
S-200-W
Model#

FORM H-2 MANUFACTURER'S DATA REPORT FOR ALL TYPES OF BOILERS EXCEPT WATERTUBE AND THOSE MADE OF CAST IRON

As Required by the Provisions of the ASME Code Rules, Section IV

1. Manufactured and certified by Sellers Manufacturing Co., 916-922 West Walnut Street, Danville, Kentucky, 40422, USA
(name and address of manufacturer)

2. Manufactured for Not Known
(name and address of purchaser)

3. Location of installation Not Known
(name and address)

4. Unit identification

Horiz. Internal Gas Fired Boiler	15793	N/A	BW-1-650	13240	2023
(complete boiler, superheater, waterwall, economizer, etc.)	(manufacturer's serial no.)	(CRN)	(drawing no.)	(National Bd. no.)	(year built)

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design conforms to ASME Code, Section IV, 2021 (year) [addenda (as applicable) (date)] N/A (Code Case no.)

Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report

(name of part, item number, manufacturer's name, and identifying stamp)

6. Shells or drums

One	SA516-70	5/16"	54"	0' 114"	N/A	N/A
(no.)	(material spec., gr.)	(thickness)	(inside diameter)	[length (overall)]	(inside diameter)	[length (overall)]

7. Joints

Welded	85%	Welded	One
[long. (seamless, welded)]	[eff. (compared to seamless)]	[girth (seamless, welded)]	(no. of shell courses)

8. Tubesheet SA516-70 (material spec., grade) 3/4" (thickness) Tube holes (100) 2 1/32" (number and diameter)

9. Tubes: No. 100 SA178A (material spec., grade) Straight (straight or bent) Diameter 2" XID Length 84" (if various, give max. and min.) Gauge .095 (or thickness)

10. Heads SA516-70 (material spec. no.) 3/4" (thickness) Flat (flat, dished, ellipsoidal) N/A (radius of dish)

11. Furnace N/A (material spec., gr.) (thickness) (no.) [size (O.D. or W x H)] [length (each section)] (total) Seams [type (plain, corrugated, etc.)] [type (seamless, welded)]

12. Staybolts N/A (no.) [size (diameter)] (material spec., gr.) (size) (telltale) (net area) [pitch (horizontal and vertical)] N/A (MAWP)

Stays or braces:

Location	Material Spec.	Type	Number and Size	Pitch	Total Net Area	Fig. HG-343 L/l	Dist. Tubes to Shell	MAWP
(a) F.H. above tubes							18"	125 psi
(b) R.H. above tubes							18"	125 psi
(c) F.H. below tubes							10"	N/A
(d) R.H. below tubes							10"	N/A
(e) Through stays								N/A

14. Other parts: 1. N/A 2. N/A 3. N/A
(brief description, i.e. dome, boiler piping)

1. N/A
2. N/A
3. N/A
(material spec., grade, size, material thickness, MAWP)

15. Nozzles, inspection and pressure relief valve openings:

Purpose (inlet, outlet, drain, etc.)	No.	Diameter or Size	Type	How Attached	Material	Nominal Thickness	Reinforcement Material	Location
Handhole	4	3½"X 4½"	NA		NA		N/A	3 shell 1hd
Manhole								
Inlet/Outlet	2	6"	150# flg	Welded	SA106B	Sch 80	none	Top shell
Saftey Valve	1	(1)1½"	fc	Welded	SA105	3000#	none	Top shell
Drain	1	2"	hc	Welded	SA105	3000#	none	Bott. shell
Fill	1	2"	hc	Welded	SA105	3000#	none	Bott. shell
Unk	3	¾"	fc	Welded	SA105	3000#	none	Top shell
Unk	3	1"	fc	Welded	SA105	3000#	none	Top&side shell

Manufactured by **Sellers Manufacturing Co., 916-922 West Walnut Street, Danville, Kentucky, 40422, USA**

Mfr's Serial No. **15793** National Board No. **13240**

. Boiler supports **One** (no.) **Skid** [type (saddles, legs, lugs)] **Welded** [attachment (bolted or welded)]

17. MAWP **125 psi** Based on **HG 301&HG 340** (Code par. and/or formula) Heating surface **339 sq. ft.** (total) Shop hydro. test **188 psi** (complete boiler)

18. Maximum water temperature **250° F**

19. Remarks

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this data report are correct and that all details of design, material, construction, and workmanship of this boiler conform to Section IV of the ASME BOILER AND PRESSURE VESSEL CODE.

"H" Certificate of Authorization no. **15482** expires **January 16, 2026**

Date **09/15/2023** Signed Justin Lee (by representative) Name **Sellers Manufacturing Co.** (manufacturer that constructed and certified boiler)

CERTIFICATE OF SHOP INSPECTION

Boiler constructed by Sellers Manufacturing Co. at 916-922 West Walnut Street, Danville, Kentucky, 40422, USA

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and employed by The Hartford Steam Boiler Inspection and Insurance Company have inspected parts of this boiler referred to as data items all and have examined this Manufacturer's Partial Data Reports for items none and state that, to the best of my knowledge and belief, the manufacturer has constructed this boiler in accordance with the applicable sections of the ASME BOILER AND PRESSURE VESSEL CODE.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the boiler described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date **09/15/2023** Signed (Authorized Inspector) Commission: **14260, MS4729, TN4148, GA1117** (National Board Authorized Inspector Commission Number)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly construction of all parts of this boiler conforms with the requirements of SECTION IV of the ASME BOILER AND PRESSURE VESSEL CODE.

"H" Certificate of Authorization no. _____ expires _____.

Date _____ Signed _____ (by representative) Name _____ (assembler that certified and constructed field assembly)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and employed by _____ have compared the statements in this Manufacturer's Data Report with the described boiler and state that the parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and that to the best of my knowledge and belief, the manufacturer and/or the assembler has constructed and assembled this boiler in accordance with the applicable sections of the ASME BOILER AND PRESSURE VESSEL CODE. The described boiler was inspected and subjected to a hydrostatic test of _____.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the boiler described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Signed _____ (Authorized Inspector) Commission _____ (National Board Authorized Inspector Commission Number)

Form and version: H2-14

Factory Test Record: Sellers Immersion Modulation

Sellers® MANUFACTURING CO.

S.O. Number	106110A	Model	S-200-W
Date	9/26/2023	Tester	JARROD

Blower Assy Manufacturer	JAN AIR	Gas Supply Press	2 PSI
Blower Model Number	SF1537400C3RB	Fuel	NATURAL
Blower Motor HP/amps	15HP/17A	Supply voltage	460V
Fan diam x width	15" X 4"	Mixer Nipples Size and Number	(3)1" &2" (6) 1.5"
Pilot Arrangement	B-5-985	Combustion Analyser	ECOM PRO

Test Data (Load %)	25.0%	33.3%	41.7%	50.0%	58.3%	66.7%	75.0%	83.3%	91.7%	100.0%
Stack O2 (%dry)	4.9	5.8	5.8	5.5	5.7	6.2	6.3	6.4	6.3	6.4
Stack CO2 (%dry)	9	8.5	8.5	8.6	8.5	8.2	8.2	8.1	8.2	8.1
Stack CO (ppm actual)	41	2	4	7	7	10	12	17	24	37
Stack NOx (ppm @ 3%O2)	13	14	23	26	28	26	28	28	29	28
Fuel Setting (degrees)	23.5	28.0	33.0	36.8	40.6	44.0	47.5	51.5	55.5	60.0
Air Setting (degrees)	0.8	5.0	11.0	16.5	24.5	34.0	41.5	51.0	62.5	66.8
VSD (%)	100.0	100.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	100.0
Stack Temp (oF)	2098	2753	3487	4195	4845	5516	6185	6882	7681	8367
Ambient Temp (oF)	86	86	87	87	87	87	87	86	86	86
Solution Temp (oF)										
Input (MBTU/HR)(ft3)	2,098	2,753	3,487	4,195	4,845	5,516	6,185	6,882	7,681	8,367
Blower Pressure ("wc)	1.5	2.0	3.0	4.0	5.5	7.0	0.5	10.5	12.5	15.0
Gas Servo ("wc)	1.5	2.0	3.0	4.0	5.5	7.0	9.0	11.0	13.0	15.5
Manifold Pressure ("wc)	1.5	2.0	2.8	4.0	5.0	6.5	8.0	10.0	11.5	13.5
Combustion C Press ("wc)	0.2	0.4	0.6	1.0	1.4	2.0	2.5	3.2	4.0	4.6
Manual Secondary Air Setting	1T									
Blower Amps L1	16.5									
Blower Amps L2	16.5									
Blower Amps L3	16.5									
Pilot Pressure ("wc)	10.0									

Notes

Shaded area is ignition point.

TEST RECORD MODULATING BOILER

Sellers® MANUFACTURING CO.

www.Sellersmfg.com
918 West Walnut St.
Danville, KY 40422

SO No. 106110A Model No. S-200-W Tested By JARROD

Project Name LOS ALAMOS NATIONAL LABS Date 9/26/2023

Project Location LOS ALAMOS, NEW MEXICO MS 15793 NB 13240

Service Password SC106110

Combustion Test Record

Fuel Used		NATURAL	
Fuel Supply Pressure		2 PSI	
Pilot Gas Pressure		10	"WC
Primary Voltage		460	V
Blower Motor NP FLA/OL Set point		17	A
Blower Motor Amps	L1	16.5	A
	L2	16.5	A
	L3	16.5	A
Control Circuit Amps	L	2	A

Housing SH1500600FEA1

Blower Impeller SF1537400C3RB

Nipple Dia. 3/8" NPT

Nipple Length and Qty. (3)1" & 2" (6)1.5"

Burner Port Diameter 5/8"

Pilot Header Position L [C] R

Burner Nozzle Size 3/4"

Pilot Header Size 1-1/4"

Runner Pilot Size 3/4"

Main Reg. Spring YELLOW

Pilot Reg. Spring PURPLE

Combustion Data

Input (MBTU/M)	MAX	IGNITION	MIN
Gas Clock ft3	8,367	4,195	2,098
O2%	6.4	5.5	4.9
CO2%	8	8.6	9
CO ppm	37	7	41
NO x ppm	28	26	13
Stack Temp	316	247	157
2nd Air Position	1T	1T	1T
Main Flame Sig	100	100	100

Pilot Flame Signal 100 %

Pri LWC Set point 13" Check X

2nd LWC Set point NA Check NA

HWC Set point NA Check NA

	MAX	MIN
Blower Pressure	15	1.5
Gas Pressure	15.5	1.5
Manifold Pressure	13.5	1.5
Comb. Chamber Press	4.6	0.2

Note: All measurements are in **"INCHES OF WATER COLUMN"**

Quality Control - Controls Check / Test Record

Tested By JARROD Date 9/26/2023

	Check	Set point
Operating Control	X	160F
High Limit Control	X	180F
Air Switch	X	4" WC
Hi Gas Press Switch	X	12" WC
Low Gas Press Switch	X	60" WC
Primary LWCO	X	13"
Secondary LWCO	NA	NA
NOVV Test	X	
High Water Cutoff	NA	
Pilot Flame Failure	X	
Main Flame Failure	X	
Proof of Closure	X	
Gas Leak Test	X	
Dielectric Test		
Spark & Flame Rod Check		
Adj Nuts Secured	X	

Energy Extractor Type

Regular

NOx

Energy Extractor Size

1/4" 5/16"

Feed Water _____ Modulating _____

Circulation Pump Provided : Y or N

Model _____

Voltage _____

Amps Set point _____

L1 _____

L2 _____

L3 _____

Pump Rotation Checked By: _____

Circulation Line Test Check

NOTES _____

D-FT2

Sellers®

MANUFACTURING CO.

OWNERS MANUAL

Model Number: S-200-W S-SERIES

S.O. Number: 106110B

Owner: LOS ALAMOS NATIONAL LABS

Location: LOS ALAMOS,NM

Authorized Representative: JAMES, COOKE & HOBSON

Phone Number: 505-344-7100

P.O. Number: 152726

Service Company:

Manual Delivered To: JAMES ROMERO

Date: 9/29/2023

Copies of the ASME data report, factory fire test report, as built wiring diagram, packing list, warranty (if applicable) and other miscellaneous information is contained in this manual.

918 W. Walnut St. • Danville, KY 40422 • Phone: (859) 236-3181 • Fax: (859) 236-3184 • www.sellersmfg.com

106110B
SO#
S-200-W
Model#

FORM H-2 MANUFACTURER'S DATA REPORT FOR ALL TYPES OF BOILERS EXCEPT WATERTUBE AND THOSE MADE OF CAST IRON

As Required by the Provisions of the ASME Code Rules, Section IV

1. Manufactured and certified by **Sellers Manufacturing Co., 916-922 West Walnut Street, Danville, Kentucky, 40422, USA** (name and address of manufacturer)

lanufactured for **Not Known** (name and address of purchaser)

3. Location of installation **Not Known** (name and address)

4. Unit identification

Horiz. Internal Gas Fired Boiler	15794	N/A	BW-1-650	13241	2023
(complete boiler, superheater, waterwall, economizer, etc.)	(manufacturer's serial no.)	(CRN)	(drawing no.)	(National Bd. no.)	(year built)

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design conforms to ASME Code, Section IV, **2021** (year) [addenda (as applicable) (date)] **N/A** (Code Case no.)

Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report

(name of part, item number, manufacturer's name, and identifying stamp)

6. Shells or drums

One	SA516-70	5/16"	54"	0' 114"	N/A	N/A
(no.)	(material spec., gr.)	(thickness)	(inside diameter)	[length (overall)]	(inside diameter)	[length (overall)]

7. Joints

Welded	85%	Welded	One
[long. (seamless, welded)]	[eff. (compared to seamless)]	[girth (seamless, welded)]	(no. of shell courses)

8. Tubesheet **SA516-70** (material spec., grade) **3/4"** (thickness) Tube holes **(100) 2 1/32"** (number and diameter)

9. Tubes: No. **100** **SA178A** (material spec., grade) **Straight** (straight or bent) Diameter **2" XID** Length **84"** (if various, give max. and min.) Gauge **.095** (or thickness)

10. Heads **SA516-70** (material spec. no.) **3/4"** (thickness) **Flat** (flat, dished, ellipsoidal) **N/A** (radius of dish)

11. Furnace **N/A** (material spec., gr.) (thickness) (no.) [size (O.D. or W x H)] [length (each section)] (total) [type (plain, corrugated, etc.)] Seams [type (seamless, welded)]

12. Staybolts **N/A** (no.) [size (diameter)] (material spec., gr.) (size) (telltale) (net area) [pitch (horizontal and vertical)] **N/A** (MAWP)

Stays or braces:

Location	Material Spec.	Type	Number and Size	Pitch	Total Net Area	Fig. HG-343 L/l	Dist. Tubes to Shell	MAWP
(a) F.H. above tubes							18"	125 psi
(b) R.H. above tubes							18"	125 psi
(c) F.H. below tubes							10"	N/A
(d) R.H. below tubes							10"	N/A
(e) Through stays								N/A

14. Other parts: 1. **N/A** 2. **N/A** 3. **N/A** (brief description, i.e. dome, boiler piping)

1. **N/A**
2. **N/A**
3. **N/A**

(material spec., grade, size, material thickness, MAWP)

15. Nozzles, inspection and pressure relief valve openings:

Purpose (inlet, outlet, drain, etc.)	No.	Diameter or Size	Type	How Attached	Material	Nominal Thickness	Reinforcement Material	Location
Handhole	4	3½"X 4½"	NA		NA		N/A	3 shell 1hd
Manhole								
Inlet/Outlet	2	6"	150# flg	Welded	SA106B	Sch 80	none	Top shell
Saftey Valve	1	(1)1½"	fc	Welded	SA105	3000#	none	Top shell
Drain	1	2"	hc	Welded	SA105	3000#	none	Bott. shell
Fill	1	2"	hc	Welded	SA105	3000#	none	Bott. shell
Unk	3	¾"	fc	Welded	SA105	3000#	none	Top shell
Unk	3	1"	fc	Welded	SA105	3000#	none	Top&side shell

Manufactured by **Sellers Manufacturing Co., 916-922 West Walnut Street, Danville, Kentucky, 40422, USA**

Mfr's Serial No. **15794** National Board No. **13241**

Boiler supports **One** (no.) **Skid** [type (saddles, legs, lugs)] **Welded** [attachment (bolted or welded)]

17. MAWP **125 psi** Based on **HG 301&HG 340** (Code par. and/or formula) Heating surface **339 sq. ft.** (total) Shop hydro. test **188 psi** (complete boiler)

18. Maximum water temperature **250° F**

19. Remarks

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this data report are correct and that all details of design, material, construction, and workmanship of this boiler conform to Section IV of the ASME BOILER AND PRESSURE VESSEL CODE.

"H" Certificate of Authorization no. **15482** expires **January 16, 2026**

Date **09/15/2023** Signed Justin Lee (by representative) Name **Sellers Manufacturing Co.** (manufacturer that constructed and certified boiler)

CERTIFICATE OF SHOP INSPECTION

Boiler constructed by Sellers Manufacturing Co. at 916-922 West Walnut Street, Danville, Kentucky, 40422, USA

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and employed by The Hartford Steam Boiler Inspection and Insurance Company

have inspected parts of this boiler referred to as data items all

and have examined this Manufacturer's Partial Data Reports for items none

and state that, to the best of my knowledge and belief, the manufacturer has constructed this boiler in accordance with the applicable sections of the ASME BOILER AND PRESSURE VESSEL CODE.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the boiler described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date **09/15/2023** Signed (Authorized Inspector) Commission: **14260, MS4729, TN4148, GA1117** (National Board Authorized Inspector Commission Number)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly construction of all parts of this boiler conforms with the requirements of SECTION IV of the ASME BOILER AND PRESSURE VESSEL CODE.

"H" Certificate of Authorization no. _____ expires _____.

Date _____ Signed _____ (by representative) Name _____ (assembler that certified and constructed field assembly)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and employed by

_____

have compared the statements in this Manufacturer's Data Report with the described boiler and state that the parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and that to the best of my knowledge and belief, the manufacturer and/or the assembler has constructed and assembled this boiler in accordance with the applicable sections of the ASME BOILER AND PRESSURE VESSEL CODE. The described boiler was inspected and subjected to a hydrostatic test of _____.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the boiler described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Signed _____ (Authorized Inspector) Commission _____ (National Board Authorized Inspector Commission Number)

Form and version: H2-14

Factory Test Record: Sellers Immersion Modulation

Sellers® MANUFACTURING CO.

S.O. Number	106110B	Model	S-200-W
Date	9/27/2023	Tester	JARROD

Blower Assy Manufacturer	JAN AIR	Gas Supply Press	2 PSI
Blower Model Number	SF1537400C3RB	Fuel	NATURAL
Blower Motor HP/amps	15HP/17A	Supply voltage	460V
Fan diam x width	15" X 4"	Mixer Nipples Size and Number	(3)1" &2" (6) 1.5"
Pilot Arrangement	B-5-985	Combustion Analyser	ECOM PRO

Test Data (Load %)	25.0%	33.3%	41.7%	50.0%	58.3%	66.7%	75.0%	83.3%	91.7%	100.0%
Stack O2 (%dry)	4.7	5.5	6.7	6.9	7	7	7.2	7	6.7	6.9
Stack CO2 (%dry)	9.1	8.6	8	7.9	7.8	7.8	7.7	7.8	8	7.9
Stack CO (ppm actual)	5	5	6	8	9	10	13	14	18	34
Stack NOx (ppm @ 3%O2)	19	27	26	27	29	28	28	28	29	28
Fuel Setting (degrees)	22.5	28.0	33.0	36.8	40.6	44.0	47.5	51.5	55.5	61.0
Air Setting (degrees)	3.2	8.0	16.2	23.0	31.0	38.0	45.5	54.0	64.5	79.0
VSD (%)	100.0	100.0	95.0	95.0	95.0	95.0	95.0	95.0	95.0	100.0
Stack Temp (oF)	190	213	227	240	255	267	279	287	288	312
Ambient Temp (oF)	80	80	80	80	80	80	80	80	79	80
Solution Temp (oF)										
Input (MBTU/HR)(ft3)	2,071	2,743	3,445	4,150	4,887	5,547	6,228	6,834	7,651	8,353
Blower Pressure ("wc)	1.5	2.0	3.5	4.0	6.0	7.0	9.0	11.0	13.0	15.5
Gas Servo ("wc)	1.5	2.5	4.0	5.0	6.5	8.0	10.0	12.0	14.0	17.0
Manifold Pressure ("wc)	1.0	1.8	3.0	4.0	5.0	7.0	8.0	10.0	11.5	14.5
Combustion C Press ("wc)	0.3	0.5	0.8	1.2	1.8	2.3	2.8	3.5	4.2	5.2
Manual Secondary Air Setting	1T									
Blower Amps L1	16.6									
Blower Amps L2	16.6									
Blower Amps L3	16.6									
Pilot Pressure ("wc)	10.0									

Notes

Shaded area is ignition point.

TEST RECORD MODULATING BOILER

Sellers® MANUFACTURING CO.

www.Sellersmfg.com
918 West Walnut St.
Danville, KY 40422

SO No. 106110B Model No. S-200-W Tested By JARROD

Project Name LOS ALAMOS NATIONAL LABS Date 9/27/2023

Project Location LOS ALAMOS, NEW MEXICO MS 15794 NB 13241

Service Password SC106110

Combustion Test Record

Fuel Used		NATURAL	
Fuel Supply Pressure		2 PSI	
Pilot Gas Pressure		10	"WC
Primary Voltage		460	V
Blower Motor NP FLA/OL Set point		17	A
Blower Motor Amps	L1	16.6	A
	L2	16.6	A
	L3	16.6	A
Control Circuit Amps	L	1.9	A

Housing SH1500600FEA1

Blower Impeller SF1537400C3RB

Nipple Dia. 3/8" NPT

Nipple Length and Qty. (3)1" & 2" (6)1.5"

Burner Port Diameter 5/8"

Pilot Header Position L [C] R

Burner Nozzle Size 3/4"

Pilot Header Size 1-1/4"

Runner Pilot Size 3/4"

Main Reg. Spring YELLOW

Pilot Reg. Spring PURPLE

Combustion Data

Input (MBTU/M)	MAX	IGNITION	MIN
Gas Clock ft3	8,353	4,150	2,071
O2%	6.9	6.9	4.7
CO2%	7.9	7.9	9.1
CO ppm	34	8	5
NO x ppm	28	27	19
Stack Temp	312	240	190
2nd Air Position	1T	1T	1T
Main Flame Sig	100	100	100

Pilot Flame Signal 100 %

Pri LWC Set point 13" Check X

2nd LWC Set point NA Check NA

HWC Set point NA Check NA

	MAX	MIN
Blower Pressure	15.5	1.5
Gas Pressure	17	1.5
Manifold Pressure	14.5	1
Comb. Chamber Press	5.2	0.3

Note: All measurements are in **"INCHES OF WATER COLUMN"**

Quality Control - Controls Check / Test Record

Tested By JARROD Date 9/27/2023

	Check	Set point
Operating Control	X	160F
High Limit Control	X	180F
Air Switch	X	4" WC
Hi Gas Press Switch	X	12" WC
Low Gas Press Switch	X	60" WC
Primary LWCO	X	13"
Secondary LWCO	NA	NA
NOVV Test	X	
High Water Cutoff	NA	
Pilot Flame Failure	X	
Main Flame Failure	X	
Proof of Closure	X	
Gas Leak Test	X	
Dielectric Test		
Spark & Flame Rod Check		
Adj Nuts Secured	X	

Energy Extractor Type

Regular

NOx

Energy Extractor Size

1/4" 5/16"

Feed Water _____ Modulating _____

Circulation Pump Provided : Y or N

Model _____

Voltage _____

Amps Set point _____

L1 _____

L2 _____

L3 _____

Pump Rotation Checked By: _____

Circulation Line Test Check

NOTES _____

D-FT2

4. AP 42 Chapter 1.4 Natural Gas Combustion, July 1998

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b]		CO	
	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from $lb/10^6$ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO x emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO x emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6 scf] = (3.67)(CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, $4.2x10^4$ $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2. Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
91-57-6	2-Methylnaphthalene[b, c]	2.4E-05	D
56-49-5	3-Methylcholanthrene[b, c]	<1.8E-06	E
	7,12-Dimethylbenz(a)anthracene[b,c]	<1.6E-05	E
83-32-9	Acenaphthene[b,c]	<1.8E-06	E
203-96-8	Acenaphthylene[b,c]	<1.8E-06	E
120-12-7	Anthracene[b,c]	<2.4E-06	E
56-55-3	Benz(a)anthracene[b,c]	<1.8E-06	E
71-43-2	Benzene[b]	2.1E-03	B
50-32-8	Benzo(a)pyrene[b,c]	<1.2E-06	E
205-99-2	Benzo(b)fluoranthene[b,c]	<1.8E-06	E
191-24-2	Benzo(g,h,i)perylene[b,c]	<1.2E-06	E
207-08-9	Benzo(k)fluoranthene[b,c]	<1.8E-06	E
106-97-8	Butane	2.1E+00	E
218-01-9	Chrysene[b,c]	<1.8E-06	E
53-70-3	Dibenzo(a,h)anthracene[b,c]	<1.2E-06	E
25321-22-6	Dichlorobenzene[b]	1.2E-03	E
74-84-0	Ethane	3.1E+00	E
206-44-0	Fluoranthene[b,c]	3.0E-06	E
86-73-7	Fluorene[b,c]	2.8E-06	E
50-00-0	Formaldehyde[b]	7.5E-02	B
110-54-3	Hexane[b]	1.8E+00	E
193-39-5	Indeno(1,2,3-cd)pyrene[b,c]	<1.8E-06	E
91-20-3	Naphthalene[b]	6.1E-04	E
109-66-0	Pentane	2.6E+00	E
85-01-8	Phenanathrene[b,c]	1.7E-05	D
74-98-6	Propane	1.6E+00	E

TABLE 1.4-3. EMISSION FACTORS FOR SPECIATED ORGANIC COMPOUNDS FROM NATURAL GAS COMBUSTION (Continued)

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
129-00-0	Pyrene[b, c]	5.0E-06	E
108-88-3	Toluene[b]	3.4E-03	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to lb/MMBtu, divide by 1,020. Emission Factors preceeded with a less-than symbol are based on method detection limits.
[b] Hazardous Air Pollutant (HAP) as defined by Section 112(b) of the Clean Air Act.
[c] HAP because it is Polycyclic Organic Matter (POM). POM is a HAP as defined by Section 112(b) of the Clean Air Act.
[d] The sum of individual organic compounds may exceed the VOC and TOC emission factors due to differences in test methods and the availability of test data for each pollutant.

TABLE 1.4-4. EMISSION FACTORS FOR METALS FROM NATURAL GAS COMBUSTION[a]

CAS No.	Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
7440-38-2	Arsenic[b]	2.0E-04	E
7440-39-3	Barium	4.4E-03	D
7440-41-7	Beryllium[b]	<1.2E-05	E
7440-43-9	Cadmium[b]	1.1E-03	D
7440-47-3	Chromium[b]	1.4E-03	D
7440-48-4	Cobalt[b]	8.4E-05	D
7440-50-8	Copper	8.5E-04	C
7439-96-5	Manganese[b]	3.8E-04	D
7439-97-6	Mercury[b]	2.6E-04	D
7439-98-7	Molybdenum	1.1E-03	D
7440-02-0	Nickel[b]	2.1E-03	C
7782-49-2	Selenium[b]	<2.4E-05	E
7440-62-2	Vanadium	2.3E-03	D
7440-66-6	Zinc	2.9E-02	E

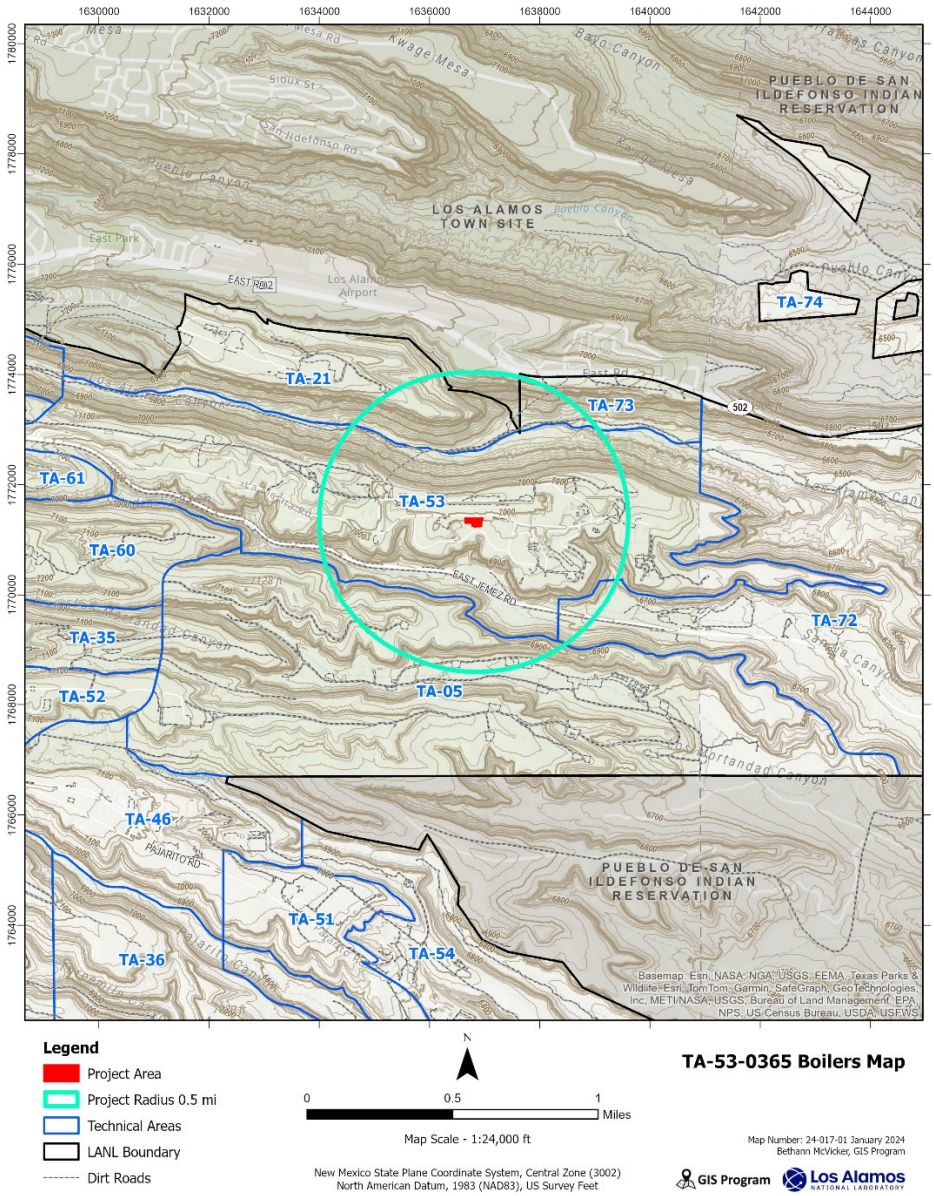
[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. Emission factors preceeded by a less-than symbol are based on method detection limits. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to lb/MMBtu, divide by 1,020.
[b] Hazardous Air Pollutant as defined by Section 112(b) of the Clean Air Act.

Section 8

Map(s)

A map such as a 7.5 minute topographic quadrangle showing the exact location of the source. The map shall also include the following:

The UTM or Longitudinal coordinate system on both axes	An indicator showing which direction is north
A minimum radius around the plant of 0.8km (0.5 miles)	Access and haul roads
Topographic features of the area	Facility property boundaries
The name of the map	The area which will be restricted to public access
A graphical scale	



Section 10

Written Description of the Routine Operations of the Facility

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A written description of the routine operations of the facility. Include a description of how each piece of equipment will be operated, how controls will be used, and the fate of both the products and waste generated. For modifications and/or revisions, explain how the changes will affect the existing process. In a separate paragraph describe the major process bottlenecks that limit production. The purpose of this description is to provide sufficient information about plant operations for the permit writer to determine appropriate emission sources.

Routine Operations

LANL historically has operated two hot water boilers for TA-53-0365 industrial hot water distribution system for heating systems associated with multiple building air handling units. The system consists of two Sellers boilers with a maximum heat input of 8.37 MMBtu/hr each. Both are natural gas fired with firetubes that eliminate thermal shock. Under standard operating conditions, the boiler plant operates 24 hours per day, 7 days per week during the winter months, approximately September - March. Routine boiler plant operation is to maintain a hot water supply temperature at 180 degrees Fahrenheit. This is attained by operating one boiler in the lead position at full output capacity and the second boiler in the lag position at partial output capacity.

Controls

Low NOX controls operate at ≤30 ppm on the replacement boilers. The equipment controls up to six independent actuators for optimal efficiency in low NOx burner applications. See Section 7 for performance testing and manufacturer information about the low NOx controls.

Waste Generation

Waste generated during the boiler replacement project will include existing metal boiler parts, water and natural gas residue pipes, electrical power and control wiring, and electronic components. TA-53's waste generation team will help identify the proper disposal paths.

Modification affecting the existing process

The original Sellers boilers were constructed in 1988 and due to age, there is a decreased efficiency and higher emissions without NOx controls. TA-53 is voluntarily planning to reduce air pollution by replacing the original boilers with low NOx boilers. There will be no change in the existing process after installation of the replacement boilers.

Bottlenecks

Bottlenecks will occur from seasonal and building hot water needs, the boilers operate as needed to provide heating and hot water to the surrounding buildings.

Section 11

Source Determination

Source submitting under 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC

Sources applying for a construction permit, PSD permit, or operating permit shall evaluate surrounding and/or associated sources (including those sources directly connected to this source for business reasons) and complete this section. Responses to the following questions shall be consistent with the Air Quality Bureau's permitting guidance, Single Source Determination Guidance, which may be found on the Applications Page in the Permitting Section of the Air Quality Bureau website.

Typically, buildings, structures, installations, or facilities that have the same SIC code, that are under common ownership or control, and that are contiguous or adjacent constitute a single stationary source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes. Submission of your analysis of these factors in support of the responses below is optional, unless requested by NMED.

A. Identify the emission sources evaluated in this section (list and describe)**: TA-53-365-BHW-1B and TA-53-365-BHW-2B**

B. Apply the 3 criteria for determining a single source:

SIC Code: Surrounding or associated sources belong to the same 2-digit industrial grouping (2-digit SIC code) as this facility, OR surrounding or associated sources that belong to different 2-digit SIC codes are support facilities for this source.

X Yes ☐ No

Common Ownership or Control: Surrounding or associated sources are under common ownership or control as this source.

X Yes ☐ No

Contiguous or Adjacent: Surrounding or associated sources are contiguous or adjacent with this source.

X Yes ☐ No

C. Make a determination:

☐ The source, as described in this application, constitutes the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes. If in "A" above you evaluated only the source that is the subject of this application, all "**YES**" boxes should be checked. If in "A" above you evaluated other sources as well, you must check **AT LEAST ONE** of the boxes "**NO**" to conclude that the source, as described in the application, is the entire source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes.

X The source, as described in this application, **does not** constitute the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes (A permit may be issued for a portion of a source). The entire source consists of the following facilities or emissions sources (list and describe): **All emission sources within the LANL Title V Operating Permit P100-R2M5.**

Section 13

Determination of State & Federal Air Quality Regulations

This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants.

Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:
For regulations that apply to specific source types, in the 'Justification' column **provide any information needed to determine if the regulation does or does not apply**. **For example**, to determine if emissions standards at 40 CFR 60, Subpart IIII apply to your three identical stationary engines, we need to know the construction date as defined in that regulation; the manufacturer date; the date of reconstruction or modification, if any; if they are or are not fire pump engines; if they are or are not emergency engines as defined in that regulation; their site ratings; and the cylinder displacement.

Required Information for Regulations that Apply to the Entire Facility:
See instructions in the 'Justification' column for the information that is needed to determine if an 'Entire Facility' type of regulation applies (e.g. 20.2.70 or 20.2.73 NMAC).

Regulatory Citations for Regulations That Do Not, but Could Apply:
If there is a state or federal air quality regulation that does not apply, but you have a piece of equipment in a source category for which a regulation has been promulgated, you must **provide the low level regulatory citation showing why your piece of equipment is not subject to or exempt from the regulation. For example** if you have a stationary internal combustion engine that is not subject to 40 CFR 63, Subpart ZZZZ because it is an existing 2 stroke lean burn stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, your citation would be 40 CFR 63.6590(b)(3)(i). **We don't want a discussion of every non-applicable regulation, but if it is possible a regulation could apply, explain why it does not. For example,** if your facility is a power plant, you do not need to include a citation to show that 40 CFR 60, Subpart OOO does not apply to your non-existent rock crusher.

Regulatory Citations for Emission Standards:
For each unit that is subject to an emission standard in a source specific regulation, such as 40 CFR 60, Subpart OOO or 40 CFR 63, Subpart HH, include the low level regulatory citation of that emission standard. Emission standards can be numerical emission limits, work practice standards, or other requirements such as maintenance. **Here are examples:** a glycol dehydrator is subject to the general standards at 63.764C(1)(i) through (iii); an engine is subject to 63.6601, Tables 2a and 2b; a crusher is subject to 60.672(b), Table 3 and all transfer points are subject to 60.672(e)(1)

Federally Enforceable Conditions:
All federal regulations are federally enforceable. All Air Quality Bureau State regulations are federally enforceable except for the following: affirmative defense portions at 20.2.7.6.B, 20.2.7.110(B)(15), 20.2.7.11 through 20.2.7.113, 20.2.7.115, and 20.2.7.116; 20.2.37; 20.2.42; 20.2.43; 20.2.62; 20.2.63; 20.2.86; 20.2.89; and 20.2.90 NMAC. Federally enforceable means that EPA can enforce the regulation as well as the Air Quality Bureau and federally enforceable regulations can count toward determining a facility's potential to emit (PTE) for the Title V, PSD, and nonattainment permit regulations.

INCLUDE ANY OTHER INFORMATION NEEDED TO COMPLETE AN APPLICABILITY DETERMINATION OR THAT IS RELEVENT TO YOUR FACILITY'S NOTICE OF INTENT OR PERMIT.

EPA Applicability Determination Index for 40 CFR 60, 61, 63, etc: http://cfpub.epa.gov/adi/

To save paper and to standardize the application format, delete this sentence, and begin your submittal for this attachment on this page.

Example of a Table for State Regulations:

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.1 NMAC	General Provisions	Yes	Facility	General Provisions apply to Notice of Intent, Construction, and Title V permit applications.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	No	Facility	Not applicable. NMAAQS compliance demonstration/modeling is not required for a NOI application.
20.2.7 NMAC	Excess Emissions	No	Facility	This would not apply to Notices of Intent since these are not permits.
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	TA-53-365-BHW-1B TA-53-365-BHW-2B	This new gas burning equipment's heat input is less than 1,000,000 million British Thermal Units per year per unit.
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	TA-53-365-BHW-1B TA-53-365-BHW-2B	The equipment is not oil burning equipment, and only burns natural gas.
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	TA-53-365-BHW-1B TA-53-365-BHW-2B	This regulation that limits opacity to 20% applies to Stationary Combustion Equipment, such as engines, boilers, heaters, and flares.
20.2.70 NMAC	Operating Permits	Yes	Facility	LANL is a major source as defined by the rule for NO2, CO, VOC, SO2, TSP, PM10, PM2.5, and greenhouse gas emissions and required to obtain a Title V operating permit. For each pollutant, this is based on potential to emit as opposed to actual emissions. The Title V application will be updated within one year of start of operations for the units included in this NOI.
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	If subject to 20.2.70 NMAC and your permit includes numerical ton per year emission limits, you are subject to 20.2.71 NMAC and normally applies to the entire facility.
20.2.72 NMAC	Construction Permits	No	Facility	A construction permit is not required for this source. When the applicability requirements of the rule are triggered for new or modified sources, a construction or NSR permit must be obtained. To date, LANL has received the following NSR permits for operations still current: 632-M1, 634-M2, 1081-M1-R7, 2195, 2195B-M3R3, 2195F-R4, 2195H, 2195N-R2, 2195P-R4
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	TA-53-365-BHW-1B TA-53-365-BHW-2B	An NOI is required for this application. LANL is required to submit an annual emission inventory report.
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	No	Facility	This rule does not apply. LANL does not have emissions or potential to emit above applicability thresholds because it has enforceable facility-wide emission limits in Permit P100-R2M5 to be a synthetic minor source for PSD permitting purposes. These two units are replacing two like-kind units, thus will not impact LANL's minor PSD source designation.
20.2.75 NMAC	Construction Permit Fees	No	TA-53-365-BHW-1B TA-53-365-BHW-2B	A construction permit is not required for this source.
20.2.77 NMAC	New Source Performance	No	TA-53-365-BHW-1B TA-53-365-BHW-2B	This is not a stationary source which is subject to the requirements of 40 CFR Part 60. TA-53-365-BHW-1B and TA-53-365-BHW-2B are less than 10 MMBtu/hr, so Subpart Dc is not applicable.

State Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification: (You may delete instructions or statements that do not apply in the justification column to shorten the document.)
20.2.78 NMAC	Emission Standards for HAPS	No	TA-53-365-BHW-1B TA-53-365-BHW-2B	The units in this application are not subject to this regulation.
20.2.79 NMAC	Permits – Nonattainment Areas	No	Facility	This rule does not apply. LANL is not located in a Nonattainment Area.
20.2.80 NMAC	Stack Heights	No	TA-53-365-BHW-1B TA-53-365-BHW-2B	Not applicable. Modeling is not required for a NOI application.
20.2.82 NMAC	MACT Standards for source categories of HAPS	No	TA-53-365-BHW-1B TA-53-365-BHW-2B	The units in this application are not subject to this regulation.

Example of a Table for Applicable Federal Regulations (Note: This is not an exhaustive list):

Federal Regulation Citation	Title	Applies? Enter Yes or No	Unit(s) or Facility	Justification:
40 CFR 50	NAAQS	No	Facility	Not applicable. NAAQS compliance demonstration/modeling is not required for a NOI application.
NSPS 40 CFR 60, Subpart A	General Provisions	No	TA-53-365-BHW-1B TA-53-365-BHW-2B	The NSPS General Provisions may apply to any unit which is subject to an NSPS. TA-53-365-BHW-1B and TA-53-365-BHW-2B have a maximum design heat capacity of 8.37 MMBtu/hr, which is under the 10 MMBtu/hr heat input capacity threshold for NSPS Subpart Dc, therefore these units are not subject to an NSPS.
NSPS 40 CFR60.40a, Subpart Da	Subpart Da, Performance Standards for Electric Utility Steam Generating Units	No	TA-53-365-BHW-1B TA-53-365-BHW-2B	LANL does not have any boilers which exceed the 250 MMBtu/hr threshold.
40 CFR 60.40c, Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	No	TA-53-365-BHW-1B TA-53-365-BHW-2B	This NSPS subpart applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h). TA-53-365-BHW-1B and TA-53-365-BHW-2B each have a maximum design heat capacity of 8.37 MMBtu/hr, which is under the 10 MMBtu/hr heat input capacity threshold.

Section 22: Certification

Company Name: Triad National Security, LLC

I, Sarah S. Holcomb, hereby certify that the information and data submitted in this application are true and as accurate as possible, to the best of my knowledge and professional expertise and experience.

Signed this 28th day of May, 2024, upon my oath or affirmation, before a notary of the State of New Mexico.

Sarah S Holcomb
*Signature

28 May 2024
Date

Sarah S. Holcomb
Printed Name

Group Leader
Title

Scribed and sworn before me on this 28th day of May, 2024.

My authorization as a notary of the State of New Mexico expires on the

12 day of June, 2027

Notary's Signature

May 28, 2024
Date

Maria Francesca Trujillo
Notary's Printed Name

STATE OF NEW MEXICO
NOTARY PUBLIC
MARIA FRANCESCA TRUJILLO
Commission Number 1057385
My Commission Expires June 12, 2027

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AE NMAC