LABORATORY DATA PACKAGE

Number of pages in this package ____ [including additional pages ____]
(Fill in when using printed copy as record)

CLIENT INFORMATION	
Company Name	Wells Mfg Co
Address	10 Sunnen Dr Po Box 430129 St Louis, MO 63143

AUDIT INFORMATION:				
Description of Tests	Per Standard No.	UL 710B CSA C22.2 No.109 CSA C22.2 No. 109 UL 300	Edition/ Revision Date	2nd 2011-09-02 M1981 R2009 3rd 2010-7-16
[X] Tests Conducted by+		Leo Carrillo Printed Name		Signature
[X] UL Staff supervising UL Staff in training		Ken Kingsbury Printed Name		Signature
Reviewed and accepted by qualified Project Handler		William G. Morler Printed Name		William G. Morler Signature

TESTS TO BE CONDUCTED:

Test No.	Start	Done	Test Name	[] Comments/Parameters []Tests Conducted by ++
1	2013-11-13	2013-11-13	POWER INPUT TEST (THREE PHASE): RATING (CSA 22.2 109-M1981):	
2	2013-11-12	2013-11-27	CAPTURE TEST:	
3	2013-11-13	2013-11-27	EMISSION TEST:	
4	2013-12-03	2013-12-03	FIRE EXTINGUISHMENT TEST: (GENERAL)	
5	2013-12-03	2013-12-10	FIRE EXTINGUISHMENT TEST: (CHARBROILERS)	

Instructions -
+ - When all tests are conducted by one person, printed name and signature can be inserted here instead of including printed name and signature on each page containing data. Must indicate number of pages in the data package.
++ - When test conducted by more than one person, printed name and signature of person conducting the test can be inserted next to the test name instead of including printed name and signature on each page containing data. Test dates may be recorded here instead of entering test dates on the individual datasheet pages. Must indicate number of pages in the data package.
+++ - Use of this field is optional and may be employed differently. If used to include a date instead of entering the testing date on the individual datasheet pages, the date shall be the date the test was conducted.

Special Instructions -

[ ] Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be recorded at the time the test is conducted.

Ambient Temperature, C	±	Relative Humidity, %	±	Barometric Pressure, mBar	±

[X] No general environmental conditions are specified in the Standard(s) or have been identified that could affect the test results or measurements.

RISK ANALYSIS RELATED TO TESTING PERFORMANCE:

The following types of risks have been identified. Take necessary precautions. This list is not all inclusive.

[X] Electric shock	**[ ]** Radiation
[X] Energy related hazards	**[ ]** Chemical hazards
[X] Fire	**[ ]** Noise
[ ] Heat related hazards	**[ ]** Vibration
[X] Mechanical	**[ ]** Other (Specify)__

Description of Tests	Per Standard No.	UL-197 CSA 22.2 109-M1981	Edition/ Revision Date	10TH 2004
Description of Tests	Per Standard No.	UL-710B	Edition/ Date	2nd 2011

TEST LOCATION: (To be completed by Staff Conducting the Testing)
[X]UL or Affiliate **[]**WTDP **[]**CTDP **[]**TPTDP **[]**TCP **[]**PPP **[]**WMT **[]**TMP **[]**SMT
Company Name: Underwriters Laboratories Inc.
Address: 333 Pfingsten Rd, Northbrook IL

TEST EQUIPMENT INFORMATION

[X] UL test equipment information is recorded on Meter Use in UL's Laboratory Project Management (LPM) database.

[] UL test equipment information is recorded on <<insert location and local laboratory equipment system identification.>>

Inst. ID No.	Instrument Type	Test Number +, Test Title or Conditioning	Function /Range	Last Cal. Date	Next Cal. Date

The following additional information is required when using client's or rented equipment, or when a UL ID Number for an instrument number is not used. The Inst. ID No. below corresponds to the Inst. ID No. above.

Inst. ID No.	Make/Model/Serial Number/Asset No.

TEST SAMPLE IDENTIFICATION:

The table below is provided to establish correlation of sample numbers to specific product related information. Refer to this table when a test identifies a test sample by "Sample No." only.

Sample Card No.	Date Received	**[]** Test No.+	Sample No.	Manufacturer, Product Identification and Ratings
1723841	09/23/13	ALL	1	Wells Mfg. Model WVU-48, rated 240 V, 3.5 A.
1723573	09/23/13	4,5	2	Neico Inc., Electric Broiler, Model JF91E, rated 208 V, 7 kW 3ph. (used for fire test)
1757946	11/12/13	1,2,3	3	Neico Inc., Electric Broiler, Model JF91E, rated 230 V, 7 kW 3ph.(used for 202 test)
1730089	11/12/13	4,5	4	(1CTN) ALL EXTRA SUPPLIES NEEDED FOR FIRE TESTING
1727183	11/12/13	all	5	BROILER STAND (PAPERWORK W/SAMPLE)

+ - If Test Number is used, the Test Number or Numbers the sample was used in must be identified on the data sheet pages or on the Data Sheet Package cover page.

[] Sampling Procedure -

[] This document contains data using color and if printed, should be printed in color to retain legibility and the information represented by the color.

POWER INPUT TEST (THREE PHASE): UL 710B Sec. 44
RATING (CSA 22.2 109-M1981): (6.2)

METHOD (NEICO MODEL JF91E)

[X] The supply voltage was adjusted to voltage and frequency as noted in "General Test Considerations", ~~240~~ 230 V, 60 Hz.

[X] To determine the proper test voltage for the Normal Temperature and Abnormal Heating Tests, the voltage was then adjusted to the value necessary to cause the appliance to draw its rated current.

Test to determine proper test voltage for c-UL testing

[X] The supply voltage was adjusted to the increased test voltage as noted below. Following the test at increased test voltage, the supply voltage was adjusted to the value necessary to cause the appliance to draw the increased test current, calculated as specified below.

Increased Test Voltage (V_t): 125V for appliances rated between 110V-125V.
216V for appliances rated 208V.
250V for appliances rated between 220V-250V.

Increased Test Current (I_t): $I_r(V_t/V_r)$ = _____ A

Increased Test Power (W_t): $W_r(V_t/V_r)^2$ = __7595____ (~~k~~W)

Where V_r, I_r, and W_r, are the rated voltage, current, and power of the appliance, respectively. Note: when the appliance is rated for a range of voltages, the mean of the range is to be used as V_r.

PARAMETERS

Appliance Ratings:

Volts: __230__; Current: ____N/A_____ A; Power: __7kW_____

POWER INPUT TEST (THREE PHASE): (CONT'D) UL 710B Sec. 44
RATING (CSA 22.2 109-M1981): (6.2)

RESULTS

Operating Conditions	Rated					Measured						
		Amps			Power,	Volts			Amps			Power,
	Volts	L1	L2	L3	(W)(kW)	L1-L2	L2-L3	L1-L3	L1	L2	L3	(W)(~~kW~~)
Full power operation, rated voltage	230	---	---	---	---	233	234	230	15.9	17.5	20.9	7300
[ ] Full power operation, rated current	---				---							
[X] Full power operation, rated power	---	---	---	---	7000	230	230	226	15.7	17.3	20.4	7002

c-UL Operating Conditions	Increased Test					Measured						
		Amps			Power,	Volts			Amps			Power,
	Volts	L1	L2	L3	(W)(kW)	L1-L2	L2-L3	L1-L3	L1	L2	L3	(W)(~~kW~~)
Full power operation, increased test voltage	250	---	---	---	---	253	255	250	17.2	19.1	22.5	8500
[ ] Full power operation, increased test current	---				---							
[X] Full power operation, increased test power	---	---	---	---	7595	239	241	236	16.2	18.0	21.2	7597

[] The input current **[**was**]** **[**was not**]** between 90% and 105% of the rated input current when the appliance was energized at rated voltage.

[x] The input power **[was]** **[**~~was not~~**]** between 90% and 105% of the rated input power when the appliance was energized at rated voltage.

CAPTURE TEST: UL 710B Sec. 58
Also reference UL 710 Sec. 31

METHOD

In accordance with Section 58.

The Neico model JF91E cooking appliance was placed under the Wells hood, model WVU-48, and was located in a draft free room and is operated at the lower air flow limit. Food product as specified below was then used for testing, see Emission Testing for specific details. The cooking area is to be observed for the presence of visible smoke and grease-laden air, and the hood assembly shall completely capture all of the emission as determined by observation.

The test shall be conducted by loading the maximum amount of the food products noted below, on or in the cooking appliance and cooking the food product until it is overcooked (very well done) as follows. The cooking cycle is to be repeated at least once.

a. Deep fat fryers are to be tested with fries,
b. Pressure deep fat fryers are to be tested with chicken pieces,
c. Griddles, broilers and similar appliances are to be tested with meat cakes,
d. Ovens, roasters and similar appliances are to be tested roasting chickens, and
e. Other appliances are to be tested using the food product(s) for which they are designed.

When one of the appliances specified in (a) - (d) is not intended for cooking the specified food (for example, donut fryers), the appliance is to be tested using the food product for which the appliance is designed.
When the device and cooking process do not produce visible cooking smoke and grease laden air, a smoke generator is to be used and positioned in the cooking area to establish a more visible means for conducting this test.

COOKING PRODUCT

[X] Meat Cakes - 70% ground beef, 30% fat, 3/8 in. thick, weighing 5 oz. minimum, approximately 4 in. diameter

EQUIPMENT LOCATION

For non-integral recirculating systems, the cooking appliance shall be installed at the maximum specified distance between the cooking surface and the front lower edge of the recirculating hood. The appliance shall be installed with the minimum specified overhang between the front and side panels of the exhaust hood and the cooking surface. Exhaust hoods intended for installations with the front edge of the cooking appliance extending outside the front edge of the exhaust hood and shall be tested with the cooking surface extended to the maximum specified distance.

1. Front Overhang (Hood, Cooking Surface): ___17.0 in.

2. Side Overhang: _____6.75 in.

3. Cooking Surface to Front Lower Edge of Hood: ___ 27.5 in.

CAPTURE TEST: (CONT'D) UL 710B Sec. 58
Also reference UL 710 Sec. 31

COOKING METHOD

~~**[**Griddle**]**~~ **[**Broiler**]**

The cooking surface shall be adjusted to the maximum recommended temperature. The cooking appliance is to be energized and equilibrium temperatures *~~(3 readings, 10 minutes apart) are to be established at the manufacturer's specified temperature of ____°F.~~

**~~The quantity of meat cakes placed on the cooking surface was the maximum permitted by the area of the cooking surface (____Qty). The meat cakes were cooked on one side for five minutes, flipped over and cooked on the other side for five minutes~~. The test was repeated at least once or until complete capture could be determined. Specific appliances which utilize cooking products other than meat cakes were tested with the specific product and cooked until overdone.

RESULTS

Their **[**~~was~~**] [was not]** the presence of visible smoke and grease-laden air from the appliance during testing.

The sample **[did] [**~~did not~~**]** capture all of the emissions from the cooking appliance. The appliance is to be observed for the presence of visible smoke and grease laden air escaping from the hood assembly through the discharge port or through external seams, joints, penetrations, and that portion of the hood that captures grease laden vapors.

***Note: as per William Morler we didn't take any reading since the unit is a chain broiler, control on unit was set at 500 degrees F. L.C 2013-11-13**

**Note: 330 total meat cakes were cooked and the time was 4:30 minutes belt time display and 5:45 minutes when the first meat cake touch the chain until fall in the cooking tray. L.C 2013-11-13

EMISSION TEST: UL 710B Sec. 59

METHOD

TEST FOR EVOLUTION OF SMOKE OR GREASE-LADEN AIR ~~(____°F):~~

In accordance with Section 59.

The Neico model JF91E cooking appliance was placed under the Well model WVU-48 hood and operating at the lower airflow limit, and is tested using a method derived from EPA Method 202. UL also provided meat cakes, 5/8in. thick, 4 in. diameter for the test. The catalyst was employed during this test (and interlocked).

A 12 in. by 6 in. rectangular, _108_ in. tall sheet metal stack was constructed on top of the Well model WVU-48 hood and mounted above the exhaust vent of the hood. A sampling port was located approximately 80 in. downstream from the hood exhaust, at which point it was determined there was laminar flow. The sampler was assembled and an out of stack filter was used. A pre-leak check was conducted and determined to be < 0.02 ft/min. Sampling was determined to be done at 8 traverse points.

The oven was operated normally by cooking the following foods:

~~**[**Griddles**]**~~ **[**Broiler**]**

~~*Meat cakes, 5 minutes per side, ____ per load. Each load took 10 minutes.~~
Note: 330 total meat cakes were cooked and the time was 4:30 minutes belt time display and 5:45 minutes when the first meat cake touch the chain until fall in the cooking tray. L.C 2013-11-13
~~**[**Fryer**]**~~
~~The fryer was operated normally by cooking the following foods at a temperature of ____°F with Clear Frying Oil (Soybean w/ additives): French Fries were used, ___ baskets with ___ lbs. per basket. Each load took ___ minutes to cook with a ___ minute recovery time.~~

~~**[**Other**]**~~_____

The cooking cycle was repeated for 8 hours of continuous cooking.
During the cooking operation, it was noted whether or not visible effluents evolved from the air exhaust of the hood. Gauge, meter and temperature readings were taken and recorded every 10 min. After cooking, the condition of the duct was noted and a post-leak check was conducted and determined to be < 0.02 ft^3/min.

*Note: This method does not apply since the unit is a chain broiler. L.C. 2013-11-03

EMISSION TEST: (CONT'D) UL 710B Sec. 59

After being allowed to cool, the sampling equipment was disassembled. The glass-filter is to be removed using a pair of forceps and placed in a clean petri dish. The dish is to be sealed and labeled "sample 1".

A sample of the acetone of the same volume that will be used to rinse-out the nozzle and probe is to be placed into a clean sample bottle, sealed, and labeled "sample 2". The level of the liquid in the sample bottle is to be recorded.

The inside of the nozzle and probe is to be rinsed with acetone taking care to collect all the rinse material in a clean sample bottle. The sample bottle is to be sealed, labeled "sample 3", and the level of the liquid in the bottle is to be recorded.

The liquid in the first three impingers is to be measured and the total volume is to be recorded which will be compared to the original volume. The liquid is to be quantitatively transferred to a clean sample bottle. Each impinger and the connecting glassware including the probe extension are to be rinsed twice with water. The rinse water is to be collected and added to the same sample bottle. The sample bottle is to be sealed, labeled "sample 4" and the level of the liquid in the bottle is to be recorded.

This rinse process is to be repeated with two rinses of methylene chloride ($MeCl_2$). The rinses are to be recovered in a clean sample bottle. The sample bottle is to be sealed, labeled "sample 5" and the level of the liquid in the bottle is to be recorded.

A volume of water approximately equivalent to the volume of water used to rinse and a volume of $MeCl_2$ approximately equivalent to the volume of $MeCl_2$ used to rinse is to be placed in two clean sample bottles. The sample bottles are to be sealed, labeled "sample 6" and "sample 7" respectively, and the level of the liquid in the bottles is to be recorded.

The weight of the fourth impinger containing the silica gel is to be recorded and then the silica gel can be discarded.

The analysis phase was done in accordance with EPA Method 202, using the out of stack filter.

RESULTS

The results [**are**] [~~are not~~] considered acceptable because there **[**~~was~~**] [was no]** visible smoke emitted from the exhaust of the hood during the normal cooking operation. There **[**~~was~~**] [was no]** noticeable amounts of smoke accumulated in the test room after 8 hours of continuous cooking.

The total amount of grease-laden effluents collected by the sampling equipment was found to be 4.40 mg/m³, which is [**less**] [~~more~~] than 5 mg/m³.

The total grease emissions (per clause 78.2 of 710B) in pounds per hour per linear food of hood was __0.003790____ lb/hr/ft.

Note: Additional spreadsheet is to be used when conducting the Emission Test. This spreadsheet (EPA 202) can be found in the Lab Equipment Management System (LEM) under global ID 58255.

EMISSION TEST: (CONT'D) UL 710B Sec. 59

CONDENSIBLE MATTER
(Lab Analysis)

Sample Bottle No.	Description	Volume, ml	Final Wt, mg
1	Filter Paper	-	0.6209
2	Acetone (Blank)	33	1.0881
3	Acetone (Wash)	21	1.0660
4&5	Solvent Phase(Wash)	200	1.0929
4&5	Water Phase (Wash)	510	1.1243
6&7	Solvent Phase (Blank)	160	1.077
6&7	Water Phase (Blank)	510	1.0596

Filter paper weight before test- _ 0.6048 _ mg

Analysis
1. The liquid level of all the sample bottles is to be measured.
2. The filter from sample one is to be removed and dried to constant weight by means of a desiccator or an oven. The weight of the filter is to be recorded.
3. The volume of sample two is to be determined. The liquid is then to be transferred to a beaker and evaporated to dryness. The volume of the liquid and the final weight of the condensable matter are to be recorded.
4. The volume of sample three is to be determined. The liquid is then to be transferred to a beaker and evaporated to dryness. The volume of the liquid and the final weight of the condensable matter are to be recorded.
5. The volumes of sample four and five are to be measured.
6. Samples four and five are to be combined. The solvent phase is to be mixed, separated, and then repeated with two $MeCl_2$ washes.
7. The solvent extracts obtained from the procedure in 6 are to be placed in a beaker and evaporated to a constant weight. The final weight is to be recorded.
8. The water phase is to be placed in a beaker and evaporated to dryness. The final weight is to be recorded.
9. The volumes of samples six and seven are to be determined. Sample bottles six and seven are to be analyzed according to procedures 8 and 7 respectively.

FIRE EXTINGUISHMENT TEST: (GENERAL) UL710B Sec. 61,62, 63

GENERAL

In accordance with Sections 61, 62, and 63

The Well model WVU-48 hood is provided with Ansul R-102 fire suppression system. Consisting of 2, 1.5 Gal. tanks, and having 245 on ends and 260 in middle type appliance nozzles positioned over the appliance as indicated below.

[ ] Deep Fat Fryers and Tilt skillets
[ ] Griddles
[ ] Range Top
[X] Char-broilers

The test is to be conducted in an environment in which the ambient temperature is not less than 50°F (10°C).

The extinguisher cylinder is to be pressurized to simulate the minimum storage temperature for the automatic operation fire test condition. The extinguishing system unit is to be allowed to operate automatically and the time between auto-ignition and unit actuation is to be determined.

The Liquid grease used during the fire extinguishment test is to have an auto-ignition temperature not less than 685°F (362.8°C).

Prior to conducting each test, the appliance is to be cleaned and provided with new fuel loading.

The hood air passageways and filters were coated with lard prior to this test. The lard was applied with a density of 0.3 pound per square foot (1.5 kg/m²) or at the lesser density required to permit sufficient airflow to restrict the low airflow control from functioning.

The temperature controls were defeated and the cooking appliance was allowed to operate until auto-ignition. After auto-ignition the time it took for the fire suppression system to detect the fire shall be recorded. Upon the detection of the fire by the suppression system, a 30 second pre-burn is to be conducted. After the 30 second pre-burn, the fire suppression system was allowed to operate in its intended manner.

A pine wood frame panel with metal mesh chicken wire screen having dried cotton patches secured at random over the entire frame was located at 6 in., 12 in. and 18 in. from __left_side___ ~~and~~ _____ of hood, adjacent to the cooking appliance. The cotton patches were dried for 8 Hours at 66°C.

Note: See UL300 for method used, unit not used to heat oil to auto ignition temp. L.C 2013-12-11

FIRE EXTINGUISHMENT TEST: (CHARBROILERS) UL710B Sec. 61,62, 63

[X**]** CHARBROILERS

METHOD

The hood was set-up as specified in the General. The char-broiler was spaced _2.75__ in. off the side wall and _2.625__ in. off the rear wall. The charbroiler grease drip pan, overall _6.875__ in. by _6.375__ in. by _4__ in. deep, was filled with _full__ in. of oil (~~Pure Soybean Oil- No additives~~)lard per UL300.

~~A thin plastic sheet, such as plastic food wrap, containing steaks and grease shall be placed on a flat surface at a location away from the char-broiler. The plastic sheet is to be covered with 1/4 inch (6.4 mm) of semisolid grease. Low-quality fatty beef steaks are then to be placed on top of the plastic sheet to cover an area equal to 80 - 90 percent of the char-broiler grate area. The char-broiler's radiant panels are to be heated with the burners at their maximum intensity so that they are hot enough to ignite drops of liquid grease. When this occurs, the plastic sheet, grease and steaks are to be placed on the broiler's grill in the normal cooking position. The char-broiler is to become quickly involved in flames.~~

The drip pan below the broiler chamber is to be filled with preheated grease. The inner surfaces of the broiler chamber, cooking portion, and grease trap are to be coated with liquid grease to obtain a minimum loading of 0.3 pounds grease per square foot (1.5 kg/m^2). Grease is also to be sprayed on all areas of the chain by causing the chain to rotate. When this is completed, 80 to 90 percent of the chain's cooking area is to be covered with fatty hamburgers 4 burgers was used(that is, meat that is 70 percent lean) and the chain rotation stopped. L.C 2013-12-11

The Dielectric Withstand test was repeated after completion of the above test.

Note: the test was conducted as follow two left side 6 inches drop spray nozzles were at 30° angle and it was aimed at the center of the catalyst, the chain broiler was preheated with and Large LP torch underneath and a small LP torch underneath the collection cup until detection occurred. L.C 2013-12-03

RESULTS

Test No.	Appliance Model	Detection Time, s	Pre-burn Time, s	Extinguish Time, s (+)	Re-ignition Y/N (*)	Notes
1	JF91E	N/A	30	44	N	

(+) - Time until all agent evacuated the system
(*) - Char-broilers are not permitted to re-ignite for 5 minutes.

[X] *There **[was] [**~~was no~~**]** indication of Dielectric Failure
[X] The extinguishing system **[suppressed] [**~~did not suppress~~**]** the fire. Re-ignition **[**~~occurred~~**] [did not occur]**. There **[**was**][**was no**]** indication of dielectric breakdown.
[X] There **[**~~was~~**] [was no]** splashing of burning grease due to the extinguishing system unit operation, as evidence by the presence of burning droplets of grease dispersed outside the appliance.
[X] The extinguisher cylinder **[was] [**~~was not~~**]** at the minimum storage temperature for the automatic operation fire test.
[X] The fire **[was][**~~was not~~**]** contained within the enclosure for all test conditions.
[X] Flames **[were] [**~~were not~~**]** contained during the appliance ignition, link detection and pre-burn.
[X] Flames **[**~~did~~**] [did not]** leave the hood periphery for more than 1 second duration during extinguishment.
[ ] If the flame did escape the hood periphery for more than 1 second, the cotton patches at the panel spaced ___ in. away were unaffected by flame.

Note: the detection part was not available due to unit was manually preheated L.C 2013-12-11
*Note: Per William Morler in the dielectric method fail due to the unit went to a multiple fire test. L.C 2013-12-11. See datasheet 1 for compliant dielectric testing after first fire test.

END OF DATASHEET PACKAGE. THIS PAGE INTENTIONALLY LEFT BLANK