March 21, 2019

Dear Steffen,

We received copies of the Fire Chief Model SF1000E Certified test results this week. We need your help to explain numerous items in this Phase 2 certification. We understand that they requested and were permitted an alternative test methodology. But it appears that the EPA certified them for Phase II of the NSPS when they didn't even achieve the Phase I requirements of the NSPS.

NSPS Phase 1 Requirements		**Test Results**		**Lamppa Results**
Burn Category	Phase I	SF1000E BTU's	SF1000E %	Vapor-fire 100
Category 1	<35%	20,338	59%	26%
Category 2	35% - 53%	22,173	64%	43%
Category 3	53% - 76%	28,360	82%	70%
Category 4	100%	34,536	100%	100%

Based upon their results it clearly shows that Fire Chief's low burn didn't meet Category 1 requirement, further, it didn't meet category 2 requirement, but actually their low burn clearly falls into the Category 3 of the **NSPS Phase 1.** **They haven't met a single burn category for Phase 1 of the NSPS!**

So how can the EPA certify them as meeting Phase II (<15% of Max Btu's)? They haven't even met Phase I (<35% of max Btu's)!

I thought the 4 categories were set up so whether people burn wood in mild weather (category I, low Btu's) or in very cold weather (Category IV – High Btu's), or anywhere in between (Category II or Category III – moderate BTU's) – the end result will be clean, non-polluting burns. Isn't that why the EPA got involved in regulating wood-burning pollution in the first place? The EPA knows people burn wood in all four categories and they want consumers to burn clean in all categories.

The EPA required Lamppa Manufacturing (Vapor-Fire 100) to meet all four burn categories, or we would not have been certified for Phase II. But now the EPA is allowing Fire Chief (SF1000E) to circumvent the NSPS 2015 Phase 1 requirement by negating the Low Btu output CAT I checks altogether, in effect saying it never needs to burn at a low Btu output, therefor doesn't need to be checked for Category I.

The EPA certified the SF1000E having a high output of 34,536 Btu/hour and a low output of 20,338 Btu/hr, which is 58% of the max output. The category1 requirement for the Phase 1 (2015 rule) for the low burn was less than 35% of maximum, which would be 12,536 Btu/hr. *58% doesn't even meet Category II, it actually falls into Category III. **Certifying this furnace to Phase II makes the EPA's NSPS rules a laughable farce!**

The Fire Chief SF1000E, along with many other furnaces that use a fan induced draft system for combustion air, also have pilot air openings right on the fan itself and/or elsewhere. The fan is usually controlled by a room thermostat that turns it on and off – on demand. Once the thermostat is satisfied, the fan-driven combustion air is turned off and the furnace relies on the pilot air opening to maintain minimum combustion. This opening is the minimum air that people in the "real world" will be using much of the time in mild weather as their low burn, because their room thermostat will be satisfied for long stretches of time. Isn't this really their Category I level that should be tested (with no thermostat interference!).

I'm sure during testing, Intertek turned the thermostat on and off trying to maintain 12,088 BTU's or less to meet a Category I level burn. 12,088 BTU's (<35%) was their target based on the 34,536 max BTU's/hr. By using a thermostat, turned on when the BTU's dropped below (target) 12,088 BTU's/hr, then turned off again above (target) 12,088 BTU's/hr, it produced a 20,338 Btu/hr output which turns out to be 58% of max. The reason this happens is that once the thermostat calls for more heat (BTU's), the blower kicks in, adding more air for combustion and more wood is ignited. Then once the thermostat temperature is satisfied – the fan is turned off and the wood is combusted with only pilot air. However, in checking the BTU output in this manner, you get an inflated number of BTU's (58%) due to the carryover of the heat generated when more wood was ignited as you try to attain the target (12,088), followed by a gradual slow down, with the pilot air now combusting the wood. After a number of ups and downs, via the thermostat controlled by the Intertek engineer, a lot of wood becomes too hot (moisture is gone) and then excess gasses and liquids are emitted, yielding way more Btu's than the target. That's why the output was 58% of maximum and not less than 35% (Category 1) (due to thermostat interference).

All fan-induced combustion air draft type furnaces should not be allowed to use a thermostat when trying to achieve <35%, but instead be totally dependent on the pilot air so they can all achieve Category I (<35%). Like I mentioned before, in the real world during mild weather, the burn level mainly used will be from the pilot air opening. If the fire dies out and smolders the wood when the thermostat doesn't interfere, it's due to lack of pilot air. It's a poor design. No engineer will be in your home to turn your thermostat on and off when the fire drops below a certain number of BTU's. The pilot air should be sufficient to maintain a clean burn and still reach <35%, Category I (the NSPS Phase I rule).

We made it perfectly clear to the EPA in past correspondences that we were only allowed the <35% Category I Alternative test method, not the <15% 2020 requirement, because Intertek made it clear to Lamppa Manufacturing before and during out testing that if all four 2015 Categories were met and had results that were ≤0.15 #'s PM/MBTU's we were 2020 and beyond certified. All four of our burns were ≤ 0.15. Evidently, Intertek knew nothing about the < 15% requirement for 2020 and beyond, and they were your certified lab. Our Vapor-Fire 100 furnace was all done being tested and already back in Tower, Minnesota before we ever knew of the 15% (2020) from Raphael. We had already been to Intertek 4 times for the VF100 testing, because of the tax credit tests and all Intertek's previous mistakes. We weren't about to ship our furnace back to Intertek, which would also mean that I'd have to go back also, to retest like Raphael insisted we do. We did exactly what Intertek had told us to do and needed for the 2020 certification.

If we were allowed to skip Category I, like the SF1000E, our computer chip would have been programed higher for all four 2015 categories. The higher settings would have given us cleaner burns along with

better test results. Our high burn was 0.04 #/MBTU and our low burn was 0.147 #/MBTU using the 2015 four Categories, so imagine how much better we would have been with no Category I to worry about and using higher settings for all the remaining categories. Is the EPA prepared to compensate Lamppa to retest our Vapor-Fire 100 with "No Category I"? It would increase our efficiency and lower our emissions.

Stephen, we would like to discuss this with you by phone at your earliest convenience. We simply don't understand the EPA's logic and/or actions.

Sincerely,

Daryl Lamppa