



# Food Service Technology Center Appliance Test Summary Report

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<b>Manufacturer</b>	Cleveland
<b>Model</b>	Steam Cub 1SCE
<b>Appliance</b>	Single Compartment 5-Pan Steamer - Electric

<b>Report Number</b>	5012.09.45
<b>Test Date</b>	November, 2009
<b>Tested By</b>	A.Spitz

## Purpose of Testing

This testing determined the energy input rate, preheat time and energy, idle energy rate, uniformity and heavy/light-load cooking-energy efficiency of the steamer by applying ASTM F1484-05.

## Energy Input Rate

Test Voltage (V)	208
Rated Energy Input Rate (kW)	9.0
Measured Energy Input Rate (kW)	9.3
Difference (%)	3.2

## Preheat to 210°F

Duration (min)	9.92
Energy Consumption (kWh)	1.54

## Idle at 212°F

Average Cavity Temperature (°F)	178
Idle Energy Rate (kW)	0.33

## Red Potato Cooking Energy Efficiency and Production Capacity Test Results

Load <sup>a</sup>	Heavy Load	Light Load
Number of Pans	5	1
Cook Time (min)	28.61	23.19
Total Energy Consumed (kWh)	1.83	0.59
Energy to Food (Btu/lb)	106	107
Energy to Steamer (Btu/lb)	155	250
Cooking Energy Rate (kW)	3.83	1.52
Cooking Energy Efficiency (%)	70.8 ± 4.3	44.7 ± 1.5
Production Capacity (lb/h)	84.2 ± 6.8	20.7 ± 1.2
Water Consumption Rate (gph)	< 2	< 2

<sup>a</sup> Each Load is based on a minimum average of three test replicates.



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### Frozen Green Pea Cooking Energy Efficiency and Production Capacity Test Results

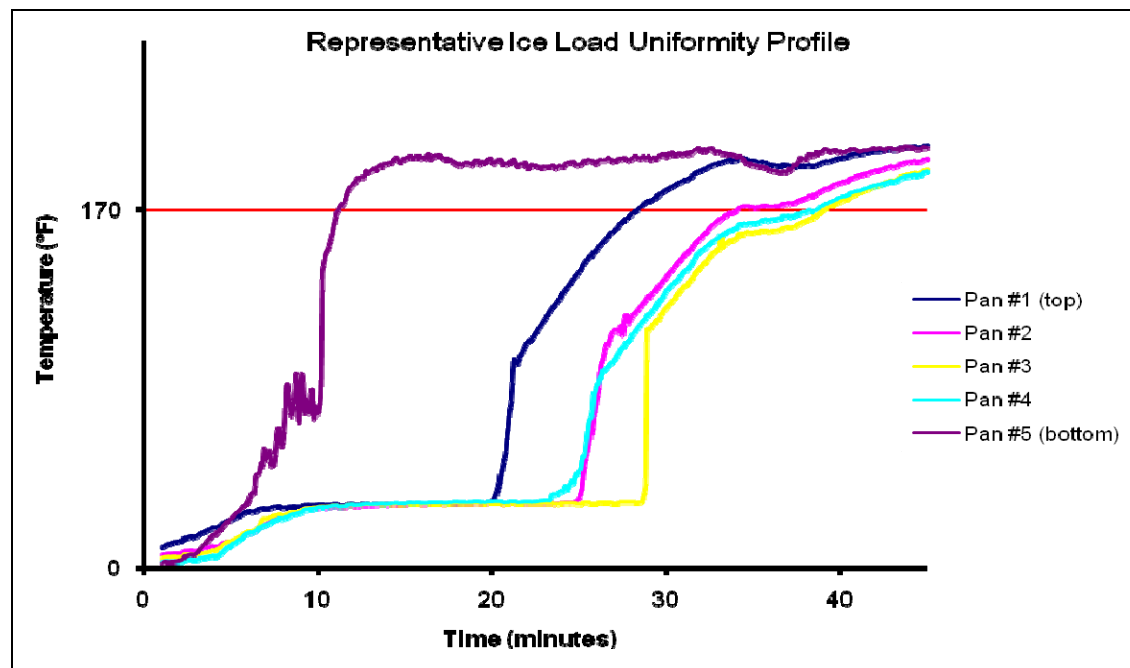
Load <sup>a</sup>	Heavy Load	Light Load
Number of Pans	5	1
Cook Time (min)	26.67	12.44
Total Energy Consumed (kWh)	3.55	0.85
Energy to Food (Btu/lb)	256	263
Energy to Steamer (Btu/lb)	303	361
Cooking Energy Rate (kW)	7.99	4.08
Cooking Energy Efficiency (%)	86.6 ± 8.5	74.7 ± 3.1
Production Capacity (lb/h)	90.0 ± 1.2	38.6 ± 0.4
Water Consumption Rate (gph)	< 2	< 2

<sup>a</sup> Each Load is based on a minimum average of three test replicates.

### Ice Load Uniformity Test Results

Load <sup>a</sup>	Heavy Load
Number of Pans	5
Cook Time (min)	35.6
Average Initial Ice-Load Temperature (°F)	3.32
Average Final Ice Load Temperatures (°F)	183.0
Pan #1 (Top)	193.0
Pan #2	180.1
Pan #3 (Middle)	170.5
Pan #4	172.7
Pan #5 (Bottom)	198.6

<sup>a</sup> Each Load is based on a minimum average of three test replicates.



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### Heavy-Load Red Potato Data

	Run #1	Run #2	Run #3
<b>Measured Values</b>			
Number of Pans	5	5	5
Cook Time (min)	27.58	29.42	28.83
Electric Energy Consumed (kWh)	1.84	1.84	1.80
Temperature of Uncooked Potatoes (°F)	76.3	71.4	73.6
Temperature of Cooked Potatoes (°F)	195.0	195.0	195.0
Weight of Stainless Steel Pans (lbs)	13.638	13.638	13.638
Weight of Potatoes (lbs)	40.091	40.123	40.105
Total Potato Count	250	250	250
Moisture Content (%)	84	84	84
Condensate Temperature (°F)	n/a	n/a	n/a
Water Consumption (gal)	< 2	< 2	< 2
<b>Calculated Values</b>			
Moisture Weight in Potatoes (lbs)	33.7	33.7	33.7
Average Weight of Each Potato (lbs)	0.16	0.16	0.16
Energy Consumed by Potatoes (Btu)	4,142	4,315	4,237
Energy to Food (Btu/lb)	103	108	106
Energy Consumed by Pans (Btu)	178	185	182
Energy of Boiler re-init (Btu)	n/a	n/a	n/a
Energy Consumed by the Steamer (Btu)	6,278	6,278	6,142
Energy to Steamer (Btu/lb of food cooked)	157	157	153
Cooking Energy Rate (kW)	4.00	3.75	3.75
Production Capacity (lb/h)	87.2	81.8	83.5
Energy Efficiency (%)	68.8	71.7	72.0

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### Light-Load Red Potato Data

	Run #1	Run #2	Run #3
<b>Measured Values</b>			
Number of Pans	1	1	1
Cook Time (min)	23.50	22.58	23.50
Electric Energy Consumed (kWh)	0.58	0.58	0.60
Temperature of Uncooked Potatoes (°F)	73.3	72.3	71.2
Temperature of Cooked Potatoes (°F)	195.1	195.1	195.1
Weight of Stainless Steel Pans (lbs)	2.818	2.818	2.818
Weight of Potatoes (lbs)	8.015	8.020	8.005
Total Potato Count	50	50	50
Moisture Content (%)	84	84	84
Condensate Temperature (°F)	n/a	n/a	n/a
Water Consumption (gal)	< 2	< 2	< 2
<b>Calculated Values</b>			
Moisture Weight in Potatoes (lbs)	6.733	6.733	6.733
Average Weight of Each Potato (lbs)	0.16	0.16	0.16
Energy Consumed by Potatoes (Btu)	849	857	863
Energy to Food (Btu/lb)	106	107	108
Energy Consumed by Pans (Btu)	38	38	38
Energy of Boiler re-init (Btu)	n/a	n/a	n/a
Energy Consumed by the Steamer (Btu)	1,979	1,979	2,047
Energy to Steamer (Btu/lb of food cooked)	247	247	256
Cooking Energy Rate (kW)	1.48	1.54	1.53
Production Rate (lb/h)	20.5	21.3	20.4
Energy Efficiency (%)	44.8	45.2	44.1

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### Heavy-Load Frozen Green Peas Data

	Run #1	Run #2	Run #3
<b>Measured Values</b>			
Number of Pans	5	5	5
Cook Time (min)	26.50	26.75	26.75
Electric Energy Consumed (kWh)	3.48	3.74	3.44
Initial Water Temperature (°F)	67.9	74.3	73.1
Final Water Temperature (°F)	112.6	117.5	115.0
Frozen Food Temperature (°F)	1.2	1.1	-2.0
Weight of Empty Calorimeter (lbs)	40.80	40.80	40.80
Weight of Full Calorimeter (lbs)	130.25	131.69	132.22
Weight of Calorimeter Water (lbs)	50.00	50.00	50.00
Weight of Cooked Food (lbs)	39.45	40.89	41.42
Weight of Frozen Food (lbs)	40.00	40.00	40.00
Weight of Stainless Steel Pans (lbs)	13.630	13.630	13.630
Moisture Content (%)	81	81	81
Condensation Temperature (°F)	n/a	n/a	n/a
Water Consumption (gal)	< 2	< 2	< 2
<b>Calculated Values</b>			
Moisture Weight in Green Peas (lbs)	32.4	32.4	32.4
Final Food Temperature (°F)	180.1	180.4	175.2
Energy Consumed by Green Peas (Btu)	10,114	10,306	10,247
Energy to Food (Btu/lb)	253	258	256
Energy Consumed by Pans (Btu)	268	269	266
Energy of Boiler re-init (Btu)	n/a	n/a	n/a
Energy Consumed by the Steamer (Btu)	11,877	12,761	11,741
Energy to Steamer (Btu/lb of food cooked)	297	319	293
Cooking Energy Rate (kW)	7.88	8.39	7.72
Productivity (lb/h)	90.6	89.7	89.7
Energy Efficiency (%)	87.4	82.9	89.5

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### Light-Load Frozen Green Peas Data

	Run #1	Run #2	Run #3
<b>Measured Values</b>			
Number of Pans	1	1	1
Cook Time (min)	12.42	12.50	12.42
Electric Energy Consumed (kWh)	0.84	0.84	0.86
Initial Water Temperature (°F)	68.4	65.9	67.4
Final Water Temperature (°F)	115.5	114.1	113.9
Frozen Food Temperature (°F)	-3.7	0.8	-4.3
Weight of Empty Calorimeter (lbs)	40.80	40.80	40.80
Weight of Full Calorimeter (lbs)	59.09	59.10	59.07
Weight of Calorimeter Water (lbs)	10.00	10.00	10.00
Weight of Cooked Food (lbs)	8.29	8.30	8.27
Weight of Frozen Food (lbs)	8.00	8.00	8.00
Weight of Stainless Steel Pans (lbs)	2.790	2.790	2.790
Moisture Content (%)	81	81	81
Condensation Temperature (°F)	n/a	n/a	n/a
Water Consumption (gal)	< 2	< 2	< 2
<b>Calculated Values</b>			
Moisture Weight in Green Peas (lbs)	6.48	6.48	6.48
Final Food Temperature (°F)	183.18	183.23	180.88
Energy Consumed by Green Peas (Btu)	2,111	2,097	2,095
Energy to Food (Btu/lb)	264	262	262
Energy Consumed by Pans (Btu)	57	56	57
Energy of Boiler re-init (Btu)	n/a	n/a	n/a
Energy Consumed by the Steamer (Btu)	2,867	2,866	2,935
Energy to Steamer (Btu/lb of food cooked)	358	358	367
Cooking Energy Rate (kW)	4.06	4.03	4.16
Production Rate (lb/h)	38.7	38.4	38.7
Energy Efficiency (%)	75.6	75.1	73.3

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