Document: CLM SOP 050 : In-Process Inspection			
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1 Purpose:

The purpose of this procedure is to provide for a system and instructions for In-Process Inspection, recording of actual inspection measurement results, and In-Process Inspection Control Plan/Inspection Results document flow. The inspection results shall be legible, neat and the form reasonably clean as it will be scanned electronically. The inspection results must be the actual measurement results. If the characteristic is variable, then the documented measurement result shall be variable.

Variable Example: .5" diameter +/- .1" The measurement results shall be variable ranging from .4 - .6"

Attribute Example: .5" – 13 UNC. The measurement results shall be pass or fail.

2 Application:

This procedure applies to all value added manufacturing processes within Centerline Machine, Inc.
SOP - 050 applies to all welders, fabricators, machinists, EDM Operator, Water jet Operator, Laser Operator, Quality Dept. personnel and all other operators of equipment contributing to the manufacture of products/services. The Laser and Water jet processes shall follow the process as outlined in 4.5 of this SOP.

3 Reference Documents:

CLMF - 050 In-Process Inspection Control Plan Inspection Results Form – (Master Form Template)
CLM SOP – 070 Control of Nonconforming Material

Each part number will have its own Template created reflecting the specific product/service Characteristics required for In-Process inspection. In the event that we receive a RUSH order from our customer and sufficient time is not allotted to prepare the In-Process Inspection Control Plan for the specific part number, please notify the Quality Manager or designee immediately. The Quality Department will produce the form expeditiously.

4 Procedure:

4.1 The Quality Manager or designee reviews the product/service blueprint, applicable customer engineering specifications, applicable customer supplier quality requirements and any applicable industry/regulatory requirements and lists the characteristics to be measured in-process by operators.

4.2 The Quality Manager or designee creates a controlled In-Process Inspection Control Plan form for the specific part number and saves it to: Z:\Quality Assurance\In-Process Inspection Templates. The Quality Manager or designee then provides a hardcopy Control Plan to Manufacturing Engineering to add to the Traveler Packet.

4.3 Supervision/Purchasing assembles the Traveler packets including the In-Process Inspection Control Plan form for that specific product/service. In the event that an In-Process Inspection Control Plan form for that specific product/service and revision level is not available, the Quality Technician should be notified immediately.

4.4 The Operators (Welders, Fabricators, Machinist, EDM Operator, Water jet Operator, Laser Operator, etc.) verifies that the product/service revision level matches those on the blueprint or other revision controlled customer supplied specification forms.

4.5 The Operators review the Traveler lot quantity and calculate the sampling plan if the lot quantity is 51 pieces or more, if less than 51 pieces reference the sampling table below. For lot sizes of 51 pieces or more, Centerline Machine used a 15% sampling plan. In-Process Inspection starts with lot quantities of 3. In the event that the calculated sampling plan includes a fraction or decimal point of a piece - round up to the nearest whole number.

Lot Size	Sample Size	Lot Size	Sample Size	Lot Size	Sample Size	Lot Size	Sample Size	Lot Size	Sample Size
1	0	11	6	21	6	31	8	41	11
2	0	12	6	22	6	32	8	42	11
3	1	13	7	23	6	33	9	43	11
4	2	14	7	24	6	34	9	44	11
5	3	15	8	25	7	35	9	45	12
6	3	16	8	26	7	36	9	46	12
7	4	17	9	27	7	37	10	47	12
8	4	18	9	28	7	38	10	48	12
9	5	19	10	29	8	39	10	49	13
10	5	20	10	30	8	40	10	50	13

Example calculation if lot size is 51 pieces or more:

60 piece lot size (x) .15 (15%) = 9

Random inspection is to start after the First Piece Inspection is completed by the Quality Department or other operator. Random inspection means that the sample pieces shall be selected to reflect the overall process to include the last piece Operators shall never select two pieces that are produced consecutively from a process to perform In-Process inspection on unless the order quantity is three (3) or less.

In the event that a nonconformance is discovered, follow the requirements of SOP – 070 Control of Nonconforming Material.

Laser and water jet processes perform in-process inspection to the characteristics provided on the In-Process Control Plan to the frequency of three times per shift. These processes are not required to follow the sample plan outlined in in 4.5 of this SOP.

4.6 The Operators include the completed In-Process Inspection Control Plan / Inspection Results with the Traveler packet once the Job is complete. To reduce complexity, operators may record inspection results for multiple jobs of the same P/N and revision on one Control Plan. Operators are to document all job numbers that apply to the Control Plan for traceability.

4.7 The Office personnel remove the Inspection Control Plans from the Traveler packet and place in a basket labeled In-Process Inspection Results.

4.8 The Quality Manager or designee reviews the Inspection results and stores the Control Plans in the part number folder.