## NOTE - ALL QUESTIONS ON THIS AUDITOR'S PROCESS GUIDE IS CONSIDERED TO BE PRIORITY CODE "A"

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| 1.  | a. Identify types of heat treatment performed at your facility being audited: |  |
|  | \_\_\_Homogenize | \_\_\_Stress Relief | \_\_\_Normalize |
|  | \_\_\_Heat Soak | \_\_\_Anneal | \_\_\_Tempering/Quenching |
|  | \_\_\_Age Hardening |  |
|  | \_\_\_Other (Specify): |  |
|  | b. Is heat-treating performed to written procedures? | \_\_\_Yes \_\_\_No \_\_\_N/A |
|  | c. Is it readily available to the operator? | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 2. | Are the heat treatment operations performed by a continuous process or individual furnace loads? |  |
|  | \_\_\_Continuous | \_\_\_Individual | \_\_\_Furnace Load | \_\_\_N/A |
| 3. | If a continuous process is used, describe fully, using specific equipment identifications (e.g. model numbers):  | \_\_\_N/A |

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|  | 1. Identify heat source type:
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|  | 1. Location:
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|  | 1. Controls:
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|  | 1. Placement of temperature monitoring equipment (i.e. thermocouples):
 |  |
| 4.  | If individual furnace loads are heat treated, describe: | \_\_\_N/A |
|  | a. Furnace type (e.g. car bottom, front load or side load). Include make or model number if possible: |  |
|  | b. Burner controls, including method of on/off switching: |  |

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|  | c. Placement of temperature sensors (thermocouples):* In oven
* On Product
 |  |
|  | d. Method of loading furnace/s:  |  |
|  | e. Method of unloading furnace/s: |  |
|  | f. Method of cooling, including transport to cooling location: |  |
|  | g. Does the furnace have sufficient temperature sensing devices to insure uniform furnace temperature? | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 6.  | Does supplier's procedures address fuel source's requirements?  | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 7. | a. Do supplier's equipment contain mercury? | \_\_\_Yes \_\_\_No \_\_\_N/A |
|  | b. Is it identified?   | \_\_\_Yes \_\_\_No \_\_\_N/A |

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|  | c. Are necessary controls in place to prevent contamination of the part?   | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 8.  | Do the procedures contain parameters, which meet applicable specifications (e.g. MIL-H-6875, MIL-STD-1684) for time and temperature? | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 9.  | Is a traveler or equivalent work process control document utilized? | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 10. | Does the work process control document contain requirements for time, temperature, cooling methods and documentation requirements?  | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 11. | a. Are time at temperature charts produced? If not, describe alternative control/s used:  | \_\_\_Yes \_\_\_No \_\_\_N/A |
|  | b. Are the at-temperature charts traceable to the material?  | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 12.  | a. What is the method utilized to confirm successful heat treat to specific required mechanical properties (hardness, tensile testing, etc.).  | \_\_\_N/A |
|  | b. Does this method meet the specified requirement?  | \_\_\_Yes \_\_\_No |
|  | c. Does the procedure ensure test coupons are heat treated together with the material? | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 13. | Does the procedure document the process for resolving nonconformance on heat-treated material?  | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 14. | Does the supplier have a system for calibration of the temperature control equipment? (E.g. controller, thermocouple, lead wire):  | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 15. | Are heat treating equipment and test equipment (including hardness testing) identified in a manner to reflect (ISO 4.11.1)? |  |
|  | a. Personnel responsible for performing calibration inspection? | \_\_\_Yes \_\_\_No \_\_\_N/A |
|  | b. Personnel responsible for calibration/inspection. | \_\_\_Yes \_\_\_No \_\_\_N/A |
|  | c. Item identity or serial number. | \_\_\_Yes \_\_\_No \_\_\_N/A |
|  | d. Is calibration current?  | \_\_\_Yes \_\_\_No \_\_\_N/A |
|  | f. If calibration is subcontracted, are sufficient subcontractor controls in place?  | \_\_\_Yes \_\_\_No \_\_\_N/A |
| **HEAT TREAT OVEN SURVEY (MIL-STD-1684)**  | \_\_\_Yes \_\_\_No \_\_\_N/A |

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| 16. | Does the supplier have a system for heat treat oven/furnace survey? | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 17. | Has the survey been performed at the correct time interval?  | \_\_\_Yes \_\_\_No \_\_\_N/A |
| 18. | Has it been done at the correct temperature?   | \_\_\_Yes \_\_\_No \_\_\_N/A |
| **WITNESS HEAT TREAT WORK IN PROCESS AND RESPOND TO THE FOLLOWING:** | \_\_\_Not Observed \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
|  | Record number of samples reviewed: \_\_\_\_\_\_\_\_\_ |  |
| 19. | Is/Are the furnaces and controllers calibrated?  | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
| 20. | Is the temperature correct?  | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
| 21. | Is the correct cooling method/medium being utilized?  | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
| 22. | Are personnel cognizant of parameters (time, temperature, cooling method) required by procedure/s and work instructions?  | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |

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| 23. | Are results being properly documented (furnace charts)?  | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
| 24. | Are heat treat procedures/work control documents readily available to operators?  | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
| 25. | Is traceability being maintained and is the material being heat-treated identified by heat number, batch number, serial number or equivalent to assure material control and prevent material mix up?  | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
| 26. | Are test coupons being heat-treated together with the material?  | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |

# Additional Comments/Concerns: