



15375 23 Mile Road, Macomb, MI 48042-4000

**Quality System
Working Instructions**

Section:
**WI8.2.4-
1004**

Prepared by:
D. Feerer

Date: 02-12-10

**Supplier Quality Assurance
Requirements**

Effective Date:
02-12-10

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Purchase Order Quality Assurance Requirements

Paragraphs indicated below are quality assurance requirements. Applicable paragraphs and special instructions are noted on the "Request for Quotation" or "Purchase Order".

1. ISO 9001 / AS9100 / inspection system is required.
2. ISO 10012-1 / ANSI 2540-1 or /Non-Destructive testing quality system reqts. I.A.W. NadCap/PRI document AC7114 if applicable.
3. S-1000, S-1001, and P1TF17 GENERAL ELECTRIC QUALITY SYSTEM REQUIREMENTS "LATEST REVISION" APPLIES. To ensure control of sub-tier process sources for each part number under VSE control and identify all fixed process information (SSPP number, controlling document number, revision and date) to the most recent applicable approval level by reviewing the P.O. flow processes and purchasing documents to subtier process sources.
4. PW-QA 6076Z (Pratt & Whitney quality system requirements). This order is for Pratt Whitney end use.
5. Sikorsky Quality System requirements: S-2000, Control of Flight safety parts and special processing. Material and Process Index (M&P), Quality Test Plans, Standard Parts Index, and Approved Source List must utilize the latest revisions as stated on Sikorsky's website; www.Sikorsky.com. Any requirements imposed must be flowed to your approved Sikorsky's sub-tier suppliers. Should you have any questions or concerns regarding the requirements of this Quality Clause, please contact your TGS Purchasing representative.
6. QPS 100 (Bell Helicopter quality system requirements).
7. Honeywell Engines & System Supplier Supplemental Purchase Order Conditions
8. HSM 1 & HSM 2 (Hamilton Standard quality system requirements). "UTC member end use" controlled per applicable Purchase Order requirements.
9. Certifications Required: The certified test data, or a true copy thereof, on stationary of the organization performing the process / service shall be supplied to TGS with each shipment. This report must contain all factual information necessary to demonstrate conformance to the requirements reflected on the drawing and shall at a minimum contain the following:
 - A. PO number
 - B. Part number and part revision
 - C. Shop number/Work order number and lot number
 - D. Quantity
 - E. Serial numbers if applicable
 - F. Operation number with revision if applicable
 - G. Specification(s) and revision

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Purchase Order Quality Assurance Requirements – Continued

- H. Actual results (quantitative test results)
 - I. All certifications must be part number specific (e.g. different part numbers on the same certification)
 - J. Quality Assurance clauses flowed down
 - K. Signature and title of authorized representative
- 10. All processing such as welding, heat treating, electroplating, cleaning, anodizing, chemical filming, testing, etc., shall be accomplished by TGS /Customer approved process vendors. Contact the TGS Purchasing Representative in writing for the latest approved sources.
- 11. Heat treat sample parts or a slug of the same material from the heat treat source is to be forwarded to TGS for each heat treat load on all carburized and hardened parts. One (1) sample for each load of fifty (50) pieces or less and one (1) additional sample for each additional fifty (50) pieces per load up to five (5) samples maximum.
- 12. Raw material certification is required to include the chemical and physical properties reflecting numerical values for all tests required by the applicable specifications, the material designation and mill source. Certifications are required to identify the material by the melt or heat number, and the material designation. The applicable specification number and latest revision at the time of purchase order are required. The material certification requires the signature and title of the suppliers authorized representative. Bar stock shall come from the same heat lot unless approved in writing by TGS - Macomb Inc. Each forging / casting is to be identified with the mill heat number or code, serial no, and foundry identification.
- 13. Cure date required. The vendor is responsible for legibly and permanently identifying each part or container with the rubber cure date, expiration date, and the applicable manufactures compound number and military compound number.
- 14. All material with a limited shelf life, such as paint, primer, adhesives, sealant, chemicals, coatings etc., are required to have the current MSDS (Material Safety Data Sheet) furnished with each shipment. The date of manufacture, lot number, expiration dates and applicable specifications are required on the certification and container. The cure date cannot exceed three (3) quarters, at the time of delivery to TGS .
- 15. Traceability: The supplier shall maintain systematic controls / records to ensure capability of tracing backwards to materials from which fabrication originated, and forward to determine the location of like articles or materials within a level of process or assembly. The supplier shall comply with applicable sections of the Federal Acquisition Regulation “FAR” and Department of Defense FAR Supplements “DFAR” 252.225.7014 (Alt 1) Preference for Domestic Specialty Metals, and DFAR 252.225.7016, Restriction on Acquisition of Ball and Roller Bearings. Along with this compliance, you are obligated to flow these requirements to your suppliers.

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Purchase Order Quality Assurance Requirements – Continued

16. The vendor is responsible for all fixtures, tooling and/or inspection gages furnished by TGS. Fixtures, tools, and/or gages are to be returned to TGS and are subject to inspection for condition. Gages that are due for calibration are required to be calibrated by TGS approved sources or returned to TGS immediately. Gages furnished by the vendor are subject to TGS inspection.
17. All parts on the Purchase Order are subject to inspection at TGS for acceptance.
18. Serial numbers are to be maintained by the vendor per the instruction on the purchase order or the operation sketch. The supplier shall provide serial numbers on all paperwork and certifications.
19. Shot / glass bead peen certification and Almen strips are required. Peening is required to be performed by a TGS / Customer approved source.
20. Final inspection reports are required with each shipment. The vendor is required to document the results of the manufactured product. The documentation shall include, but not limited to: Results of all blueprint dimensions, blueprint notes, and specifications. Certifications for all certifiable operations (i.e, raw material, heat treat, plating, NDT, surface preparations and testing if required) shall be included with the final inspection report.
21. First Piece inspection is required to be performed by TGS on this lot of parts. The vendor is required to document the “Actual” results of the 100% inspection conducted on the “First Piece Inspection” sheet submitted to TGS on all operations performed. Production is not authorized until TGS has approved the 1st Piece submitted by the supplier.
22. TGS source inspection is mandatory. When source inspection is performed, the vendors measuring equipment is to be made available for use to determine product conformance to requirements. Vendor personnel are to be made available for operation of the equipment and otherwise assist as requested. Source inspection may include review of systems, procedures and facilities for compliance with purchase order requirements. Notify TGS 48 hours in advance of the time parts are ready for verification.
23. First Article Inspection Reports (FAIR) are required. The vendor is required to document the actual results of the manufactured product. The documentation shall include, but not limited to: Results of all blueprint dimensions, blueprint notes, and specifications. Certifications for all certifiable operations (i.e, raw material, heat treat, plating, NDT, surface preparations and testing if required). An approved First Article package shall demonstrate that the supplier’s production process is capable of producing an article compliant to all design requirements. First Article inspection is required for 1st time manufacture, any change to the original processing, drawing change, or a lapse in part production, greater than two (2) years.

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Purchase Order Quality Assurance Requirements – Continued

24. Customer/Government inspection is required prior to shipment from the vendor plant. Upon receipt of this order, promptly notify the Customer/Government Representative who normally service the vendor's plant so that appropriate planning for the inspection can be accomplished. On receipt of this order, promptly furnish a copy to the Customer/Government Representative, or if none, to the nearest Army, Navy, Air Force or Defense Supply Agency inspection office. In the event the representative or office cannot be located, the TGS purchasing agent should be notified immediately.
25. Product certifications and shipping documents are required to indicate "Bell Helicopter Primary Parts". Certification must also include the BHT purchase order number.
26. Product certifications and shipping documents are required to indicate "Bell Helicopter Critical Parts". Certification must also include the BHT purchase order number.
27. Product certifications and shipping documents are required to indicate "Bell Helicopter Flight Safety Parts". Certification must also include the BHT purchase order number.
28. Product certifications and shipping documents are required to indicate "Sikorsky Aircraft Parts".
29. Product certifications and shipping documents are required to indicate "Sikorsky Aircraft Flight Safety Parts".
30. Sampling requirement acceptable per 2.5.A.Q.L. per MIL-STD-105E modified to a zero acceptance level, or if required, customer specific sampling plans are to be used.
31. The supplier is required to notify TGS immediately when "TGS/Customer Supplied Material" is lost, damaged or found to be nonconforming. Non-conforming material must be segregated and tagged with discrepancy listed prior to shipment to TGS. The Supplier is also required to notify their suppliers of any nonconforming product identified, and make arrangements for TGS disposition of the sub-tier supplier nonconforming material.
32. Prior to return shipments to TGS or drop shipments directly to a TGS customer, all material is to be cleaned and protected as required so as to be free of all foreign material, substances or residue, which may have occurred during processing or handling and packaging is required to prevent physical damage. All parts are to be suitably corrosion protected by immersing and lubricating the parts in accordance with MIL-C-16173E, MIL-L-6085C or MIL-C-8188C. Exception to oiling parts that are Stainless Steel or Aluminum product is called out on TGS Sketches.
33. This process is frozen and cannot be deviated from without written approval from TGS. The Frozen/fixed processing number must be included on all certifications.
34. Material Safety Data sheets are required.

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Purchase Order Quality Assurance Requirements – Continued

35. PWAC material is to be produced, controlled, tested and certified in accordance with PWA LCS including PWA 300 and MCL Manual Sections F-14, F-17, F-22 and F-23.
36. Fastener Quality Act – Product manufactured on or after May 27, 1998 is required to comply with Public Law 101-592, as amended by Public Law 104-113.
37. SPC data is required. The supplier’s SPC data report must contain: lot start and end date, measuring device used, gage repeatability and reproducibility percentage for the measuring device, the operation name of the characteristic sampled, the sample size, mean, standard deviation, and CPK calculation. For assistance, contact the TGS Quality Assurance Department.
38. Systems or processes used to fulfill the requirements of this order are subject to “Right of Entry” by customer, supplier and or regulatory agencies to determine and verify the quality of the contracted work records and or materials. In the event that the TGS purchasing department proposes to delegate product verification to a subcontractor, purchasing will define the requirements for the delegation and maintain a list of the delegations.
39. Seller shall accurately label, consistent with section 611 of the Clean Air Act, any products that are supplied to the buyer that contain a controlled substance or are manufactured with a controlled substance.
40. The vendor is required to notify TGS, prior to implementation, any changes in processes or system that would impact product quality. Changes that may affect quality include but are not limited to: use of new procurement sources, new part number or materials, changes in personnel, in manufacturing/quality assurance certified areas, loss of survey approval, and significant changes within the supplier’s subcontractor facilities. TGS may require a new First Article to assure purchase order and drawing conformance.
41. Vendors performing parts mark operations must have their marking verified by TGS Engineering / Quality in writing prior to marking, to ensure accuracy and completion. Forward the marking data to the TGS Purchasing representative.
42. Vendors are required to flow down to subtier suppliers the applicable requirements of the TGS purchasing documents, including key characteristics and customer drop shipments where required.
43. GE design change approval is required with product certifications and shipping documents of product that has undergone a design change. GE requires that All product design change requests or change notifications are approved by GE prior to implementation. If there are any questions pertaining to this requirement, the TGS purchasing agent is to be notified immediately.

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Purchase Order Quality Assurance Requirements – Continued

44 Obsolete

45 Product certifications for Rolls-Royce “Fixed Process” parts are to be labeled “In compliance with Rolls-Royce RRES 90000”. Compliance to Rolls-Royce “RRESS90000” SABRe requirements is required to include Special Processes, changes to Engineering specs, fixed processes detailed in the Purchase Order, engineering drawings and All appropriate NTS requirements documented online at: www.suppliermanager-online.com. Rolls-Royce is the End User on this order.

46 *GEAE is the end user of this order.*

47 Certified Supplier Program: Requires final acceptance and release from the TGS-Macomb Supplier Quality Representative (SQR) prior to shipment. Documentation includes Product Declaration Checklist, Over-Inspection Check Sheet, test reports and other pertinent data applicable to the order in accordance with WI8.2.4-1050, Certified Supplier Program.

48 Government Purchasing Records: All purchase orders for subcontracted products or processes that contain CCs must clearly identify the CC and reference QE-STD-1 for compliance. All documents and referenced data for FSPs shall be available for review by the Government to determine compliance.

49 For Rolls Royce Products, Castings and Forgings purchased to a Rolls-Royce drawing part number, an approved Rolls Royce FAIR cover sheet must be sent with every shipment.

50 Supplier will adhere to the directions provided in executive order(EO) 13224. Executive Order on Terrorist financing – Blocking property and prohibiting transactions with persons who commit, threaten, to commit, or support terrorism, effective 9/24/01 and any subsequent changes made to it.

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 - G. Specification(s) and revision

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- H. Actual results (quantitative test results)
 - I. All certifications must be part number specific (e.g. different part numbers on the same certification)
 - J. Quality Assurance clauses flowed down
 - K. Signature and title of authorized representative

- 10. All processing such as welding, heat treating, electroplating, cleaning, anodizing, chemical filming, testing, etc., shall be accomplished by TGS /Customer approved process vendors. Contact the TGS Purchasing Representative in writing for the latest approved sources.

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- 13. Cure date required. The vendor is responsible for legibly and permanently identifying each part or container with the rubber cure date, expiration date, and the applicable manufactures compound number and military compound number.

- 14. All material with a limited shelf life, such as paint, primer, adhesives, sealant, chemicals, coatings etc., are required to have the current MSDS (Material Safety Data Sheet) furnished with each shipment. The date of manufacture, lot number, expiration dates and applicable specifications are required on the certification and container. The cure date cannot exceed three (3) quarters, at the time of delivery to TGS .

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36. Fastener Quality Act – Product manufactured on or after May 27, 1998 is required to comply with Public Law 101-592, as amended by Public Law 104-113.
37. SPC data is required. The supplier’s SPC data report must contain: lot start and end date, measuring device used, gage repeatability and reproducibility percentage for the measuring device, the operation name of the characteristic sampled, the sample size, mean, standard deviation, and CPK calculation. For assistance, contact the TGS Quality Assurance Department.
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**Triumph Gear Systems -
Macomb, Inc.**
A Triumph Group Company

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D. Feerer

Date: 02-12-10

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Purchase Order Quality Assurance Requirements – Continued

44 Obsolete

45 Product certifications for Rolls-Royce “Fixed Process” parts are to be labeled “In compliance with Rolls-Royce RRES 90000”. Compliance to Rolls-Royce “RRESS90000” SABRe requirements is required to include Special Processes, changes to Engineering specs, fixed processes detailed in the Purchase Order, engineering drawings and All appropriate NTS requirements documented online at: www.suppliermanager-online.com. Rolls-Royce is the End User on this order.

46 *GEAE is the end user of this order.*

47 Certified Supplier Program: Requires final acceptance and release from the TGS-Macomb Supplier Quality Representative (SQR) prior to shipment. Documentation includes Product Declaration Checklist, Over-Inspection Check Sheet, test reports and other pertinent data applicable to the order in accordance with WI8.2.4-1050, Certified Supplier Program.

48 Government Purchasing Records: All purchase orders for subcontracted products or processes that contain CCs must clearly identify the CC and reference QE-STD-1 for compliance. All documents and referenced data for FSPs shall be available for review by the Government to determine compliance.

49 For Rolls Royce Products, Castings and Forgings purchased to a Rolls-Royce drawing part number, an approved Rolls Royce FAIR cover sheet must be sent with every shipment.

50 Supplier will adhere to the directions provided in executive order(EO) 13224. Executive Order on Terrorist financing – Blocking property and prohibiting transactions with persons who commit, threaten, to commit, or support terrorism, effective 9/24/01 and any subsequent changes made to it.

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15375 23 Mile Road, Macomb, MI 48042-4000

**Quality System
Working Instructions**

Section:
**WI8.2.4-
1004**

Prepared by:
D. Feerer

Date: 02-12-10

**Supplier Quality Assurance
Requirements**

Effective Date:
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Purchase Order Quality Assurance Requirements

Paragraphs indicated below are quality assurance requirements. Applicable paragraphs and special instructions are noted on the "Request for Quotation" or "Purchase Order".

1. ISO 9001 / AS9100 / inspection system is required.
2. ISO 10012-1 / ANSI 2540-1 or /Non-Destructive testing quality system reqts. I.A.W. NadCap/PRI document AC7114 if applicable.
3. S-1000, S-1001, and P1TF17 GENERAL ELECTRIC QUALITY SYSTEM REQUIREMENTS "LATEST REVISION" APPLIES. To ensure control of sub-tier process sources for each part number under VSE control and identify all fixed process information (SSPP number, controlling document number, revision and date) to the most recent applicable approval level by reviewing the P.O. flow processes and purchasing documents to subtier process sources.
4. PW-QA 6076Z (Pratt & Whitney quality system requirements). This order is for Pratt Whitney end use.
5. Sikorsky Quality System requirements: S-2000, Control of Flight safety parts and special processing. Material and Process Index (M&P), Quality Test Plans, Standard Parts Index, and Approved Source List must utilize the latest revisions as stated on Sikorsky's website; www.Sikorsky.com. Any requirements imposed must be flowed to your approved Sikorsky's sub-tier suppliers. Should you have any questions or concerns regarding the requirements of this Quality Clause, please contact your TGS Purchasing representative.
6. QPS 100 (Bell Helicopter quality system requirements).
7. Honeywell Engines & System Supplier Supplemental Purchase Order Conditions
8. HSM 1 & HSM 2 (Hamilton Standard quality system requirements). "UTC member end use" controlled per applicable Purchase Order requirements.
9. Certifications Required: The certified test data, or a true copy thereof, on stationary of the organization performing the process / service shall be supplied to TGS with each shipment. This report must contain all factual information necessary to demonstrate conformance to the requirements reflected on the drawing and shall at a minimum contain the following:
 - A. PO number
 - B. Part number and part revision
 - C. Shop number/Work order number and lot number
 - D. Quantity
 - E. Serial numbers if applicable
 - F. Operation number with revision if applicable
 - G. Specification(s) and revision

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D. Feerer

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Purchase Order Quality Assurance Requirements – Continued

- H. Actual results (quantitative test results)
 - I. All certifications must be part number specific (e.g. different part numbers on the same certification)
 - J. Quality Assurance clauses flowed down
 - K. Signature and title of authorized representative

- 10. All processing such as welding, heat treating, electroplating, cleaning, anodizing, chemical filming, testing, etc., shall be accomplished by TGS /Customer approved process vendors. Contact the TGS Purchasing Representative in writing for the latest approved sources.

- 11. Heat treat sample parts or a slug of the same material from the heat treat source is to be forwarded to TGS for each heat treat load on all carburized and hardened parts. One (1) sample for each load of fifty (50) pieces or less and one (1) additional sample for each additional fifty (50) pieces per load up to five (5) samples maximum.

- 12. Raw material certification is required to include the chemical and physical properties reflecting numerical values for all tests required by the applicable specifications, the material designation and mill source. Certifications are required to identify the material by the melt or heat number, and the material designation. The applicable specification number and latest revision at the time of purchase order are required. The material certification requires the signature and title of the suppliers authorized representative. Bar stock shall come from the same heat lot unless approved in writing by TGS - Macomb Inc. Each forging / casting is to be identified with the mill heat number or code, serial no, and foundry identification.

- 13. Cure date required. The vendor is responsible for legibly and permanently identifying each part or container with the rubber cure date, expiration date, and the applicable manufactures compound number and military compound number.

- 14. All material with a limited shelf life, such as paint, primer, adhesives, sealant, chemicals, coatings etc., are required to have the current MSDS (Material Safety Data Sheet) furnished with each shipment. The date of manufacture, lot number, expiration dates and applicable specifications are required on the certification and container. The cure date cannot exceed three (3) quarters, at the time of delivery to TGS .

- 15. Traceability: The supplier shall maintain systematic controls / records to ensure capability of tracing backwards to materials from which fabrication originated, and forward to determine the location of like articles or materials within a level of process or assembly. The supplier shall comply with applicable sections of the Federal Acquisition Regulation “FAR” and Department of Defense FAR Supplements “DFAR” 252.225.7014 (Alt 1) Preference for Domestic Specialty Metals, and DFAR 252.225.7016, Restriction on Acquisition of Ball and Roller Bearings. Along with this compliance, you are obligated to flow these requirements to your suppliers.

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Prepared by: D. Feerer

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Purchase Order Quality Assurance Requirements – Continued

16. The vendor is responsible for all fixtures, tooling and/or inspection gages furnished by TGS. Fixtures, tools, and/or gages are to be returned to TGS and are subject to inspection for condition. Gages that are due for calibration are required to be calibrated by TGS approved sources or returned to TGS immediately. Gages furnished by the vendor are subject to TGS inspection.
17. All parts on the Purchase Order are subject to inspection at TGS for acceptance.
18. Serial numbers are to be maintained by the vendor per the instruction on the purchase order or the operation sketch. The supplier shall provide serial numbers on all paperwork and certifications.
19. Shot / glass bead peen certification and Almen strips are required. Peening is required to be performed by a TGS / Customer approved source.
20. Final inspection reports are required with each shipment. The vendor is required to document the results of the manufactured product. The documentation shall include, but not limited to: Results of all blueprint dimensions, blueprint notes, and specifications. Certifications for all certifiable operations (i.e, raw material, heat treat, plating, NDT, surface preparations and testing if required) shall be included with the final inspection report.
21. First Piece inspection is required to be performed by TGS on this lot of parts. The vendor is required to document the “Actual” results of the 100% inspection conducted on the “First Piece Inspection” sheet submitted to TGS on all operations performed. Production is not authorized until TGS has approved the 1st Piece submitted by the supplier.
22. TGS source inspection is mandatory. When source inspection is performed, the vendors measuring equipment is to be made available for use to determine product conformance to requirements. Vendor personnel are to be made available for operation of the equipment and otherwise assist as requested. Source inspection may include review of systems, procedures and facilities for compliance with purchase order requirements. Notify TGS 48 hours in advance of the time parts are ready for verification.
23. First Article Inspection Reports (FAIR) are required. The vendor is required to document the actual results of the manufactured product. The documentation shall include, but not limited to: Results of all blueprint dimensions, blueprint notes, and specifications. Certifications for all certifiable operations (i.e, raw material, heat treat, plating, NDT, surface preparations and testing if required). An approved First Article package shall demonstrate that the supplier’s production process is capable of producing an article compliant to all design requirements. First Article inspection is required for 1st time manufacture, any change to the original processing, drawing change, or a lapse in part production, greater than two (2) years.

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Purchase Order Quality Assurance Requirements – Continued

24. Customer/Government inspection is required prior to shipment from the vendor plant. Upon receipt of this order, promptly notify the Customer/Government Representative who normally service the vendor's plant so that appropriate planning for the inspection can be accomplished. On receipt of this order, promptly furnish a copy to the Customer/Government Representative, or if none, to the nearest Army, Navy, Air Force or Defense Supply Agency inspection office. In the event the representative or office cannot be located, the TGS purchasing agent should be notified immediately.
25. Product certifications and shipping documents are required to indicate "Bell Helicopter Primary Parts". Certification must also include the BHT purchase order number.
26. Product certifications and shipping documents are required to indicate "Bell Helicopter Critical Parts". Certification must also include the BHT purchase order number.
27. Product certifications and shipping documents are required to indicate "Bell Helicopter Flight Safety Parts". Certification must also include the BHT purchase order number.
28. Product certifications and shipping documents are required to indicate "Sikorsky Aircraft Parts".
29. Product certifications and shipping documents are required to indicate "Sikorsky Aircraft Flight Safety Parts".
30. Sampling requirement acceptable per 2.5.A.Q.L. per MIL-STD-105E modified to a zero acceptance level, or if required, customer specific sampling plans are to be used.
31. The supplier is required to notify TGS immediately when "TGS/Customer Supplied Material" is lost, damaged or found to be nonconforming. Non-conforming material must be segregated and tagged with discrepancy listed prior to shipment to TGS. The Supplier is also required to notify their suppliers of any nonconforming product identified, and make arrangements for TGS disposition of the sub-tier supplier nonconforming material.
32. Prior to return shipments to TGS or drop shipments directly to a TGS customer, all material is to be cleaned and protected as required so as to be free of all foreign material, substances or residue, which may have occurred during processing or handling and packaging is required to prevent physical damage. All parts are to be suitably corrosion protected by immersing and lubricating the parts in accordance with MIL-C-16173E, MIL-L-6085C or MIL-C-8188C. Exception to oiling parts that are Stainless Steel or Aluminum product is called out on TGS Sketches.
33. This process is frozen and cannot be deviated from without written approval from TGS. The Frozen/fixed processing number must be included on all certifications.
34. Material Safety Data sheets are required.

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Purchase Order Quality Assurance Requirements – Continued

- 35. PWAC material is to be produced, controlled, tested and certified in accordance with PWA LCS including PWA 300 and MCL Manual Sections F-14, F-17, F-22 and F-23.
- 36. Fastener Quality Act – Product manufactured on or after May 27, 1998 is required to comply with Public Law 101-592, as amended by Public Law 104-113.
- 37. SPC data is required. The supplier’s SPC data report must contain: lot start and end date, measuring device used, gage repeatability and reproducibility percentage for the measuring device, the operation name of the characteristic sampled, the sample size, mean, standard deviation, and CPK calculation. For assistance, contact the TGS Quality Assurance Department.
- 38. Systems or processes used to fulfill the requirements of this order are subject to “Right of Entry” by customer, supplier and or regulatory agencies to determine and verify the quality of the contracted work records and or materials. In the event that the TGS purchasing department proposes to delegate product verification to a subcontractor, purchasing will define the requirements for the delegation and maintain a list of the delegations.
- 39. Seller shall accurately label, consistent with section 611 of the Clean Air Act, any products that are supplied to the buyer that contain a controlled substance or are manufactured with a controlled substance.
- 40. The vendor is required to notify TGS, prior to implementation, any changes in processes or system that would impact product quality. Changes that may affect quality include but are not limited to: use of new procurement sources, new part number or materials, changes in personnel, in manufacturing/quality assurance certified areas, loss of survey approval, and significant changes within the supplier’s subcontractor facilities. TGS may require a new First Article to assure purchase order and drawing conformance.
- 41. Vendors performing parts mark operations must have their marking verified by TGS Engineering / Quality in writing prior to marking, to ensure accuracy and completion. Forward the marking data to the TGS Purchasing representative.
- 42. Vendors are required to flow down to subtier suppliers the applicable requirements of the TGS purchasing documents, including key characteristics and customer drop shipments where required.
- 43. GE design change approval is required with product certifications and shipping documents of product that has undergone a design change. GE requires that All product design change requests or change notifications are approved by GE prior to implementation. If there are any questions pertaining to this requirement, the TGS purchasing agent is to be notified immediately.

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**Triumph Gear Systems -
Macomb, Inc.**
A Triumph Group Company

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Purchase Order Quality Assurance Requirements – Continued

44 Obsolete

45 Product certifications for Rolls-Royce “Fixed Process” parts are to be labeled “In compliance with Rolls-Royce RRES 90000”. Compliance to Rolls-Royce “RRESS90000” SABRe requirements is required to include Special Processes, changes to Engineering specs, fixed processes detailed in the Purchase Order, engineering drawings and All appropriate NTS requirements documented online at: www.suppliermanager-online.com. Rolls-Royce is the End User on this order.

46 *GEAE is the end user of this order.*

47 Certified Supplier Program: Requires final acceptance and release from the TGS-Macomb Supplier Quality Representative (SQR) prior to shipment. Documentation includes Product Declaration Checklist, Over-Inspection Check Sheet, test reports and other pertinent data applicable to the order in accordance with WI8.2.4-1050, Certified Supplier Program.

48 Government Purchasing Records: All purchase orders for subcontracted products or processes that contain CCs must clearly identify the CC and reference QE-STD-1 for compliance. All documents and referenced data for FSPs shall be available for review by the Government to determine compliance.

49 For Rolls Royce Products, Castings and Forgings purchased to a Rolls-Royce drawing part number, an approved Rolls Royce FAIR cover sheet must be sent with every shipment.

50 Supplier will adhere to the directions provided in executive order(EO) 13224. Executive Order on Terrorist financing – Blocking property and prohibiting transactions with persons who commit, threaten, to commit, or support terrorism, effective 9/24/01 and any subsequent changes made to it.

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Purchase Order Quality Assurance Requirements

Paragraphs indicated below are quality assurance requirements. Applicable paragraphs and special instructions are noted on the "Request for Quotation" or "Purchase Order".

1. ISO 9001 / AS9100 / inspection system is required.
2. ISO 10012-1 / ANSI 2540-1 or /Non-Destructive testing quality system reqts. I.A.W. NadCap/PRI document AC7114 if applicable.
3. S-1000, S-1001, and P1TF17 GENERAL ELECTRIC QUALITY SYSTEM REQUIREMENTS "LATEST REVISION" APPLIES. To ensure control of sub-tier process sources for each part number under VSE control and identify all fixed process information (SSPP number, controlling document number, revision and date) to the most recent applicable approval level by reviewing the P.O. flow processes and purchasing documents to subtier process sources.
4. PW-QA 6076Z (Pratt & Whitney quality system requirements). This order is for Pratt Whitney end use.
5. Sikorsky Quality System requirements: S-2000, Control of Flight safety parts and special processing. Material and Process Index (M&P), Quality Test Plans, Standard Parts Index, and Approved Source List must utilize the latest revisions as stated on Sikorsky's website; www.Sikorsky.com. Any requirements imposed must be flowed to your approved Sikorsky's sub-tier suppliers. Should you have any questions or concerns regarding the requirements of this Quality Clause, please contact your TGS Purchasing representative.
6. QPS 100 (Bell Helicopter quality system requirements).
7. Honeywell Engines & System Supplier Supplemental Purchase Order Conditions
8. HSM 1 & HSM 2 (Hamilton Standard quality system requirements). "UTC member end use" controlled per applicable Purchase Order requirements.
9. Certifications Required: The certified test data, or a true copy thereof, on stationary of the organization performing the process / service shall be supplied to TGS with each shipment. This report must contain all factual information necessary to demonstrate conformance to the requirements reflected on the drawing and shall at a minimum contain the following:
 - A. PO number
 - B. Part number and part revision
 - C. Shop number/Work order number and lot number
 - D. Quantity
 - E. Serial numbers if applicable
 - F. Operation number with revision if applicable
 - G. Specification(s) and revision

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Purchase Order Quality Assurance Requirements – Continued

- H. Actual results (quantitative test results)
 - I. All certifications must be part number specific (e.g. different part numbers on the same certification)
 - J. Quality Assurance clauses flowed down
 - K. Signature and title of authorized representative

- 10. All processing such as welding, heat treating, electroplating, cleaning, anodizing, chemical filming, testing, etc., shall be accomplished by TGS /Customer approved process vendors. Contact the TGS Purchasing Representative in writing for the latest approved sources.

- 11. Heat treat sample parts or a slug of the same material from the heat treat source is to be forwarded to TGS for each heat treat load on all carburized and hardened parts. One (1) sample for each load of fifty (50) pieces or less and one (1) additional sample for each additional fifty (50) pieces per load up to five (5) samples maximum.

- 12. Raw material certification is required to include the chemical and physical properties reflecting numerical values for all tests required by the applicable specifications, the material designation and mill source. Certifications are required to identify the material by the melt or heat number, and the material designation. The applicable specification number and latest revision at the time of purchase order are required. The material certification requires the signature and title of the suppliers authorized representative. Bar stock shall come from the same heat lot unless approved in writing by TGS - Macomb Inc. Each forging / casting is to be identified with the mill heat number or code, serial no, and foundry identification.

- 13. Cure date required. The vendor is responsible for legibly and permanently identifying each part or container with the rubber cure date, expiration date, and the applicable manufactures compound number and military compound number.

- 14. All material with a limited shelf life, such as paint, primer, adhesives, sealant, chemicals, coatings etc., are required to have the current MSDS (Material Safety Data Sheet) furnished with each shipment. The date of manufacture, lot number, expiration dates and applicable specifications are required on the certification and container. The cure date cannot exceed three (3) quarters, at the time of delivery to TGS .

- 15. Traceability: The supplier shall maintain systematic controls / records to ensure capability of tracing backwards to materials from which fabrication originated, and forward to determine the location of like articles or materials within a level of process or assembly. The supplier shall comply with applicable sections of the Federal Acquisition Regulation “FAR” and Department of Defense FAR Supplements “DFAR” 252.225.7014 (Alt 1) Preference for Domestic Specialty Metals, and DFAR 252.225.7016, Restriction on Acquisition of Ball and Roller Bearings. Along with this compliance, you are obligated to flow these requirements to your suppliers.

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Purchase Order Quality Assurance Requirements – Continued

16. The vendor is responsible for all fixtures, tooling and/or inspection gages furnished by TGS. Fixtures, tools, and/or gages are to be returned to TGS and are subject to inspection for condition. Gages that are due for calibration are required to be calibrated by TGS approved sources or returned to TGS immediately. Gages furnished by the vendor are subject to TGS inspection.
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18. Serial numbers are to be maintained by the vendor per the instruction on the purchase order or the operation sketch. The supplier shall provide serial numbers on all paperwork and certifications.
19. Shot / glass bead peen certification and Almen strips are required. Peening is required to be performed by a TGS / Customer approved source.
20. Final inspection reports are required with each shipment. The vendor is required to document the results of the manufactured product. The documentation shall include, but not limited to: Results of all blueprint dimensions, blueprint notes, and specifications. Certifications for all certifiable operations (i.e, raw material, heat treat, plating, NDT, surface preparations and testing if required) shall be included with the final inspection report.
21. First Piece inspection is required to be performed by TGS on this lot of parts. The vendor is required to document the “Actual” results of the 100% inspection conducted on the “First Piece Inspection” sheet submitted to TGS on all operations performed. Production is not authorized until TGS has approved the 1st Piece submitted by the supplier.
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Purchase Order Quality Assurance Requirements – Continued

24. Customer/Government inspection is required prior to shipment from the vendor plant. Upon receipt of this order, promptly notify the Customer/Government Representative who normally service the vendor's plant so that appropriate planning for the inspection can be accomplished. On receipt of this order, promptly furnish a copy to the Customer/Government Representative, or if none, to the nearest Army, Navy, Air Force or Defense Supply Agency inspection office. In the event the representative or office cannot be located, the TGS purchasing agent should be notified immediately.
25. Product certifications and shipping documents are required to indicate "Bell Helicopter Primary Parts". Certification must also include the BHT purchase order number.
26. Product certifications and shipping documents are required to indicate "Bell Helicopter Critical Parts". Certification must also include the BHT purchase order number.
27. Product certifications and shipping documents are required to indicate "Bell Helicopter Flight Safety Parts". Certification must also include the BHT purchase order number.
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30. Sampling requirement acceptable per 2.5.A.Q.L. per MIL-STD-105E modified to a zero acceptance level, or if required, customer specific sampling plans are to be used.
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32. Prior to return shipments to TGS or drop shipments directly to a TGS customer, all material is to be cleaned and protected as required so as to be free of all foreign material, substances or residue, which may have occurred during processing or handling and packaging is required to prevent physical damage. All parts are to be suitably corrosion protected by immersing and lubricating the parts in accordance with MIL-C-16173E, MIL-L-6085C or MIL-C-8188C. Exception to oiling parts that are Stainless Steel or Aluminum product is called out on TGS Sketches.
33. This process is frozen and cannot be deviated from without written approval from TGS. The Frozen/fixed processing number must be included on all certifications.
34. Material Safety Data sheets are required.

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Purchase Order Quality Assurance Requirements – Continued

- 35. PWAC material is to be produced, controlled, tested and certified in accordance with PWA LCS including PWA 300 and MCL Manual Sections F-14, F-17, F-22 and F-23.
- 36. Fastener Quality Act – Product manufactured on or after May 27, 1998 is required to comply with Public Law 101-592, as amended by Public Law 104-113.
- 37. SPC data is required. The supplier’s SPC data report must contain: lot start and end date, measuring device used, gage repeatability and reproducibility percentage for the measuring device, the operation name of the characteristic sampled, the sample size, mean, standard deviation, and CPK calculation. For assistance, contact the TGS Quality Assurance Department.
- 38. Systems or processes used to fulfill the requirements of this order are subject to “Right of Entry” by customer, supplier and or regulatory agencies to determine and verify the quality of the contracted work records and or materials. In the event that the TGS purchasing department proposes to delegate product verification to a subcontractor, purchasing will define the requirements for the delegation and maintain a list of the delegations.
- 39. Seller shall accurately label, consistent with section 611 of the Clean Air Act, any products that are supplied to the buyer that contain a controlled substance or are manufactured with a controlled substance.
- 40. The vendor is required to notify TGS, prior to implementation, any changes in processes or system that would impact product quality. Changes that may affect quality include but are not limited to: use of new procurement sources, new part number or materials, changes in personnel, in manufacturing/quality assurance certified areas, loss of survey approval, and significant changes within the supplier’s subcontractor facilities. TGS may require a new First Article to assure purchase order and drawing conformance.
- 41. Vendors performing parts mark operations must have their marking verified by TGS Engineering / Quality in writing prior to marking, to ensure accuracy and completion. Forward the marking data to the TGS Purchasing representative.
- 42. Vendors are required to flow down to subtier suppliers the applicable requirements of the TGS purchasing documents, including key characteristics and customer drop shipments where required.
- 43. GE design change approval is required with product certifications and shipping documents of product that has undergone a design change. GE requires that All product design change requests or change notifications are approved by GE prior to implementation. If there are any questions pertaining to this requirement, the TGS purchasing agent is to be notified immediately.

Checked: DF	Approved: JH	Approved: CQI	Audit Date: TBD
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**Triumph Gear Systems -
Macomb, Inc.**
A Triumph Group Company

15375 23 Mile Road, Macomb, MI 48042-4000

**Quality System
Working Instructions**

**Supplier Quality Assurance
Requirements**

Section:
**WI8.2.4-
1004**

Effective Date:
02-12-10

Prepared by:

D. Feerer

Date:

02-12-10

Revision :

Q

Page:

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Purchase Order Quality Assurance Requirements – Continued

44 Obsolete

45 Product certifications for Rolls-Royce “Fixed Process” parts are to be labeled “In compliance with Rolls-Royce RRES 90000”. Compliance to Rolls-Royce “RRESS90000” SABRe requirements is required to include Special Processes, changes to Engineering specs, fixed processes detailed in the Purchase Order, engineering drawings and All appropriate NTS requirements documented online at: www.suppliermanager-online.com. Rolls-Royce is the End User on this order.

46 *GEAE is the end user of this order.*

47 Certified Supplier Program: Requires final acceptance and release from the TGS-Macomb Supplier Quality Representative (SQR) prior to shipment. Documentation includes Product Declaration Checklist, Over-Inspection Check Sheet, test reports and other pertinent data applicable to the order in accordance with WI8.2.4-1050, Certified Supplier Program.

48 Government Purchasing Records: All purchase orders for subcontracted products or processes that contain CCs must clearly identify the CC and reference QE-STD-1 for compliance. All documents and referenced data for FSPs shall be available for review by the Government to determine compliance.

49 For Rolls Royce Products, Castings and Forgings purchased to a Rolls-Royce drawing part number, an approved Rolls Royce FAIR cover sheet must be sent with every shipment.

50 Supplier will adhere to the directions provided in executive order(EO) 13224. Executive Order on Terrorist financing – Blocking property and prohibiting transactions with persons who commit, threaten, to commit, or support terrorism, effective 9/24/01 and any subsequent changes made to it.

Checked: DF	Approved JH	Approved: CQI	Audit Date: TBD
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