‘Copy Exact’ Awareness Training
GT Supplier Change Control
‘Copy Exact’ Training Outline

- ‘Copy Exact’ Philosophy
  - What is ‘Copy Exact’?
  - What are the Benefits?
  - Expectations & Responsibility
  - What is a Qualified Process?
  - Prevention of Violations

- Change Communication & Management
  - Supplier Change Notification Form & Process

- Evidence of Training Compliance
What is ‘Copy Exact’?

- **History**
  - Pioneered by Intel Corporation, the original purpose of the ‘Copy Exact’ methodology was for semiconductor manufacturers to be able to ramp up production quickly and with identical results.
  - Everything which might affect the process, or how it is run is to be copied down to the finest detail, unless it is either physically impossible to do so, or there is an overwhelming competitive benefit to introducing a change.
What is ‘Copy Exact’?

- **History**
  - Copy Exact is a disciplined approach for Design & Process change management throughout the supply chain and it ensures true interchangeability of components & spare parts.
    - **Physical Interchangeability (Form & Fit)** – Equivalent parts capable of being installed, removed, or replaced without sustaining or causing damage, misalignment, or interference.
    - **Functional Interchangeability** – Parts equivalent in safety, characteristics of operation, performance, durability, serviceability, structural strength, material, & protective finish.
What are the Benefits?

- ‘Copy Exact’ enables the delivery of product from multiple production facilities, supporting Intel’s ‘Virtual Factory’ concept.
- Faster production ramp up that improves product availability.
- Improves consistency in quality performance between different customer fabrication facilities.
- Reduces time & money invested in re-engineering what should be the same process.
Expectations & Responsibility

- No changes to Design, Process, Equipment, or Materials without prior notification & approval.
  - Once a process is approved through acceptance of the First Article it is then considered ‘Locked In’.
  - This is also known as a Process of Record (POR) or Process Qualification Program (PQP).
  - This applies to all parts whether or not a formal POR or PQP exists.
- The prime supplier is responsible for ensuring all sub-tier suppliers & processors are working to the same ‘Copy Exact’ requirements.
Expectations & Responsibility

- In the case a change must be made:
  - Any change is to be implemented with control & the suitable amount of transition time (minimum of 9 months).
  - Any change is to be justified with adequate benefits.
  - The change needs to be validated with appropriate test data.

- Quality is the responsibility of Everyone!
What is a Qualified Process?

- All process steps are identified with controls in-place to ensure repeatability.
- Critical features have been identified with a documented measurement method & inspection frequency established.
- Production data is collected & monitored, the appropriate response and escalation steps are identified in the event data begins to trend outside of control limits.
What is a Qualified Process?

- All calibration & maintenance requirements involved in the production, inspection, & testing are documented & complied with.
- First Article is completed to ensure part meets intent and upon approval ‘locks in’ the Process.
Prevention of Violations

- What is a ‘Copy Exact’ Violation?
  - When a supplier or sub-tier supplier makes an unauthorized, uncontrolled, and/or undocumented deviation to the established system configuration or to the system component manufacturing procedures without notification or adequate prior warning.
  - A violation may be discovered during a failure analysis or through audit even if no impact was detected.
Prevention of Violations

- What is the Result of a ‘Copy Exact’ Violation?
  - An unintended result could potentially effect:
    - Safety & Ergonomics
    - Process Controls
    - Tool Reliability
    - Manufacturing
    - Control & Automation
    - Obsolescence of Downstream Operations & Procedures.
    - Obsolescence of Spare Parts Inventory
    - Require New Tool Shipments & Qualification
Prevention of Violations

- What is the Cost of a Violation?
  - Seemingly insignificant changes in a component may have a serious adverse effect in the semiconductor manufacturing process with money lost in materials and equipment down time.
  - Violations discovered by our customers through audit or investigation may result in Greene, Tweed & Co’s supplier approval rating lowered, business and financial penalties.
  - Loss of business for GTC and it’s supply base!
Prevention of Violations

- Do not make any changes unless approved by Greene, Tweed & Co. & notify us when there is a plan to:
  - Change in manufacturing location.
  - Change to a material or special process supplier.
  - Revision or part number change.

- Be proactive on obsolete material & communicate changes.
  - Plan for last time buys to bridge time required for requalification.
Prevention of Violations

- Make ‘Copy Exact’ awareness part of your business culture.
- Educate your own supply chain on ‘Copy Exact’ requirements.
- Communicate up front with Greene, Tweed & Co.’s Supply Chain Specialists and use them as a resource in planning changes.
Supplier Change Notification Process

- Request the current revision Supplier Change Notification form from a Greene, Tweed, Co. supply chain specialist.
- Return the completed form to GTC supply chain specialist including:
  - Description of the change.
  - Justification for the change.
  - Part numbers affected.
  - On-hand balance of parts manufactured to the current qualified process.
  - Is a last time buy possible to the current qualified process & what would be the maximum quantity available for this.
  - If applicable, identification of proposed replacement material.
Supplier Change Notification Process

- The Greene, Tweed & Co. will forward the request to the appropriate internal engineering and customer service functions for review and disposition.
- If approval is granted, then the GTC supply chain will immediately contact the supplier to confirm the controlled plan for implementation and requalification.
Evidence of Training Compliance

- All suppliers involved in the Semiconductor business sector of Greene, Tweed & Co. must complete this training & the accompanying ‘Copy Exact’ test with their employees and their sub-tier suppliers.
- ‘Copy Exact’ training should be part of any new hire orientation.
- The suppliers must send a copy of the training records with test scores to their GTC Supply Chain Specialist as evidence of compliance.
- The training record must include signatures from the supplier’s Quality & Operations management.