



DoD Metal Finishing Workforce Development Program

An NCMS Project Proposal

Jeremy Smith, CEF, Materials Engineer

Materials & Process Engineering Division

Corpus Christi Army Depot

jeremy.smith4@us.army.mil

(361) 961-2301 x234



A Problem Exists

- **Reported that at least 50% of Federal workforce eligible to retire within 5 years**
- **Skill level will be impacted from loss**
- **As will: productivity, cost, turn-around-time and product quality**
- **New technology and change become difficult to implement due to lost corporate knowledge**



Snapshot of Today

- **High workload volume 24/7 ongoing maintenance activities (3 Shifts)**
- **Slowly bringing in new (younger) workforce (New Hires)**
- **Working on more complex weapons systems today than in the past**
- **No organized or formal training plan**
 - Production must go on
 - Cannot afford to have long training sessions
 - Knowledge is highly specialized
 - Typically only have OJT to pass on knowledge



A Few Words About OJT

- **It has its place in the overall scheme of things, but can become dangerous when used exclusively to impart knowledge**
- **Inconsistent, varies from person-to-person some people are good trainers, others not so good...**
- **OJT usually imparts only a superficial knowledge of the process (not the in-depth “why”)**
- **Unfortunately a not so competent finisher training a new person results in two not so competent finishers**



Why the Need?

- **Parts put in tank with wrong polarity were etched—
If only the operator had understood the proper basic plating tank set-up**
- **Steel parts were etched during passivation--If only the operator had known some basic chemistry and metallurgy and known what signs signal trouble e.g. parts turning dark and gassing**
- **When asked, they could not explain what an acid, or alkaline solution was, the difference between ferrous and nonferrous metals, nor the reason for going into a plating solution with live current. They should all know these answers and much more...**



Proposal

- **Develop a common cross-service self study PC based modular training program for workforce**
- **Leverage the common metal finishing processes found at DOD maintenance activities**
- **Build it module-by-module for common finishing processes to include for example aluminum anodizing, conversion coatings, chromium, cadmium, and copper plating and others...**
- **Also develop foundation knowledge in chemistry, electricity, and practical metallurgy**



Proposal (cont')

- **Use a combination of mixed media formats (video, animation and graphics) to create self-study modules**
- **Develop PC based self paced study modules**
- **Lesson modules will include student testing and recordkeeping (satisfy auditing requirements)**
- **Apply to new employees or for those established employees seeking refresher training**

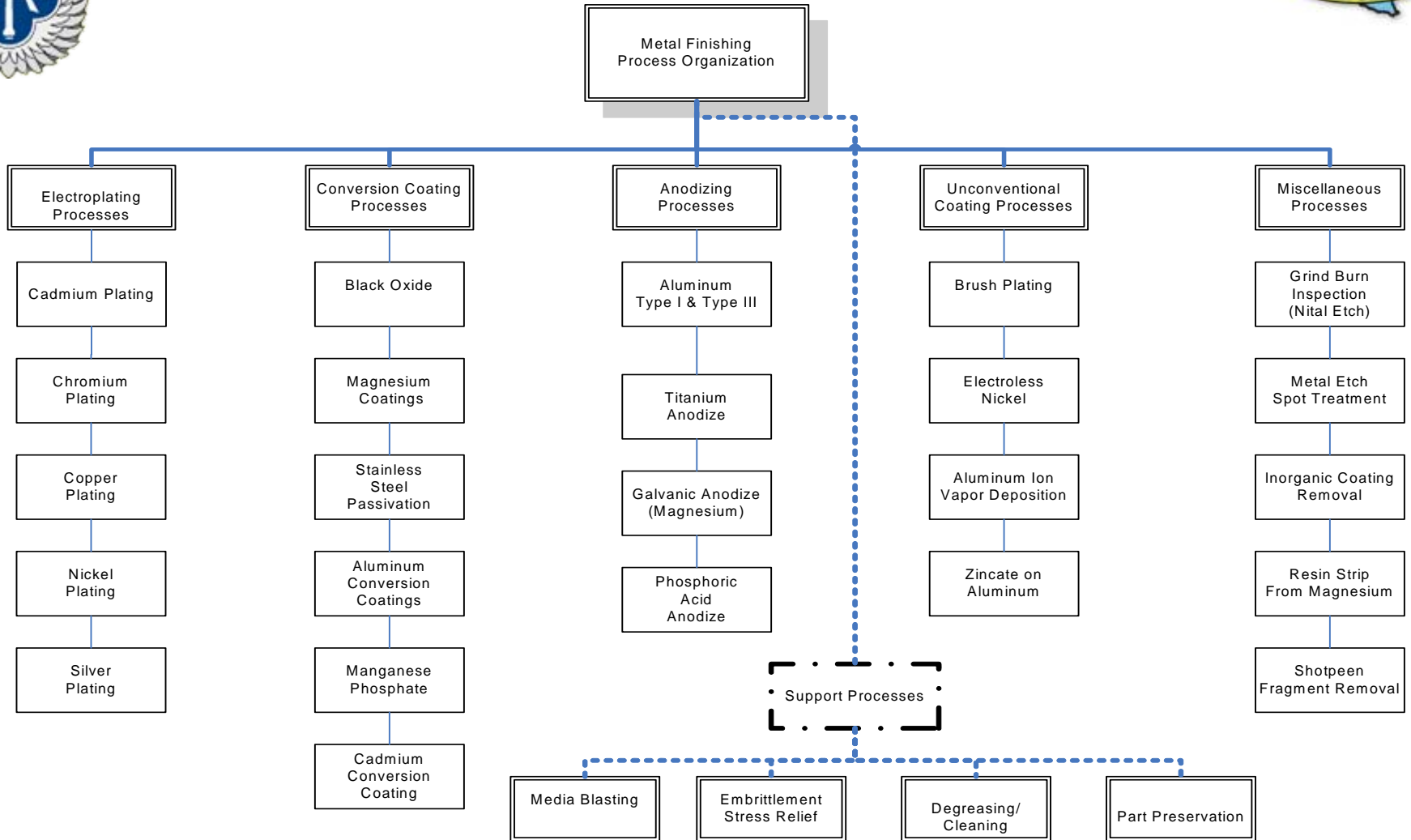


Benefits

- **Structured training**
- **Will complement OJT efforts**
- **Train during non-peak production periods**
- **Can be done on all shifts—no special scheduling needed**
- **Minimal impact on regular production**
- **Regain the depth of knowledge that's currently being lost (rebuild it better than before)**
- **Modular concept can be applied to other processes like painting, cleaning, plastic media blasting and composites**
- **Long term reduction in damaged parts and rework costs**
- **Decreased cycle time and improved process quality**



Process Overview (Example)





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