Friends, Donors, and Fellow Lovers of Liberty,
This update may be a bit scant on topical content, but I'll try to show and tell as much as possible. Yet another announcement of delay associated with delivery on start-up projects, from which we've failed to except ourselves.

Jacket production has been delayed again.

In supremely ironic frustration, news came only 2 days after emission of the last update, in which I estimated we'd be tooled for jacket production in November, that there would be a significant delay in the jacket molding system. To facilitate an understanding of the cause will require a bit of backstory.

I have surely impressed upon you the special challenge posed by the jackets for injection molding technology. Part of the required solution is an extremely niche, complex, and expensive (same cost as the rest of the mold tooling combined) valve gate system to control melt flow at the injection site (the center of the jacket floor). Our molding house contacted every company in the world capable of producing such a gate system to subcontract its production, and 3 of the 4 declined, believing the part too difficult to produce. The remaining valve gate company projected great confidence before abruptly expressing concern about the same particular aspect of the gate's performance as the declining firms. Our molder, as great as he is, had already planned and demonstrated a confident fix for this concern independent of the gate system, but the subcontractor insisted on adding a custom valve gate system to our prototype mold, pro gratis, to work-out a better fit at a temporal cost of 3 weeks. We were quite unhappy to hear about this, but our tolerance for it lies somewhere between "we'll have a fantastic prototype set-up to tune our assembly machine before the production mold is built and experiment with pigments in the future" and "you don't refuse free equipment from the only company in the world willing to work with you". Then the approval for the special allowance got tied-up for several weeks in the company's internal bureaucracy during a coincidence of consecutive vacations taken by the individual nodes in their management chain responsible for approval, adding those weeks to the delay. The gate has now shipped to our molder and it looks like **we'll have production-identical prototype jackets in about 2 weeks**. These will still be prototypes which cost ~10X what production jackets will, but they'll allow us dial-in and verify assembly machine function while we wait-out the lead-time of the production mold tooling, which **is said to be 8 weeks** and will begin elapsing once the prototype jackets are approved. I'll attach a couple images of the gate system along with this update so you can see the complexity, but alas a glance at the images seems only to reveal about half the complexity as the assembly viewed and rotated in 3D space.

Machine speed and reliability are improving in the meantime.

- **Installation of permanent tooling continues**
  As discussed in the last update, we're replacing the 3D-printed prototype assembly tooling used in development with permanent tooling of hardened stainless steel. This is progressing piece-by-piece as the job shop is capable and prioritized by criticality of each part in the reliability and speed of the assembly machine. The changeover is about

50% complete and much of the work I face right now is revising parts which mate with the new tooling as the machined dimensions are truer-to-specification than those of the printed stand-in to which the mating parts were tailored to match, an artifact of reverse-engineering some components and our low-budget approach to development.

- **Less-critical systems are nearing design completion**
  This in large part comprises the automated system by which assembled bullets are gathered out of the machine to be held during curing, and resultantly, we should be running near optimal production rate from the onset rather than having to slowly ramp-up production rate after the product hits market. My work priorities are and have been greatly ordered by which items will be most effective in increasing machine run speed and reducing down-time.

And we're reconfiguring the adhesive dispensing system

Cyanoacrylate, the type of adhesive employed in the projectiles, is difficult to dispense in an automated manner owing to quick set-times and a fierce determination to bind anything that isn't among a limited selection of polymer species. We'd originally chosen a "Loctite"-branded peristaltic pump recommended by Loctite for the Loctite adhesive we use, which we learned when time came to integrate into the machine, drifts excessively in dispensed volume over the course of a single hour as the supplied tubing takes a compression set. Other dispensing options from Loctite are likewise rebranded products produced by other OEMs (who lack knowledge of adhesive use and compatibility) and appear unreasonably complicated and expensive, both initially and in regular maintenance. Most frustrating is the inaccessibility of Loctite's field applications knowledge behind a wall of worthless salesmen and petty support policies which favor one-time equipment sales of several grand over assistance in dispensing the hundreds of dollars in adhesive we'll need to purchase from them per-day per-machine! Now we plan to phase Loctite products out of our operation altogether; yet another massive corporation so inept in operation or poor in product performance that we have to bridge their shortcomings as the yet-tiny, penny-ante operation we are.

And so Michael has spear-headed the effort to configure our own dispensing system of components produced by several suppliers, which we believe is a novel approach to automated CA dispensing. This involves extensive research and experimentation, but the solution is shaping-up to be an order of magnitude cheaper than commercially-available options and much less than half as complex, demanding far less down-time for maintenance. It seems a defining aspect of Atlas Arms is that we're continually faced with necessity to innovate new modes of operations which seem beyond the scope of our specific aims in order to proceed with the project, such as ballistics theory to optimize cartridge efficiency, development of a Ghost Gunner add-on, and now adhesive dispensing. We've passed around the idea of spin-off enterprises to further develop and avail these incidental innovations, and perhaps an "Atlas Adhesives" or something is in the cards for the future to offer our experience to others.

Those adding-up the presented lead-times will count jacket production a total of 10 weeks from now, but at this point after so many delays beyond our control or foresight, **I don't**

want to give you any hard estimate. I never really do/did because these things are so unknown at a fundamental level, for all new production operations but especially for start-ups, new technology, and in the economic shambles of the day. But I certainly understand the anxiety when “I don’t know” is the answer to “when will this be done?” and I feel it most of all. So I’ll keep you updated every couple months and apprised of the situation so you know as much as I do. Maybe the next update will be to tell you we’re in production. I’d sure like that. It would appear and is mostly true that all these delays have been caused by circumstances largely beyond our control, but ultimately responsibility lies with us to foresee and deal with them as they arise, a charge on which I believe we’ve delivered better than others, especially with a 1- to 2-man workforce, but in retrospect might have better still.

I want to express a personal gratitude to those of you who have responded to these updates with personal and professional encouragement. It really helps my mental state and perhaps even health. And I appreciate all of you bearing with us through all the long road of development, the economic insanity of the last few years, and through this ongoing manufacturing start-up.

Reach out any time by email or through Twitter. Tell us you’re a donor to warm our reception.

--Austin Thomas Jones
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