AEROSPACE STANDARD ***Society of Aerospace Automotive Engineers*** *"Because Piloting a Plane is Just Like Driving a Car"*	**DUMBAS9100C** *A Smartass' Guide to AS9100*
	Issued 1999-11 Revised 2009-01 Rejected by Boeing 2009-02 Re-revised 2009-03 Rejected again, this time by Honeywell 2009-04 Re-re-revised 2009-05 OK, guys, enough already 2009-06

Quality Management Systems – Requirements for Really Big, Bloated Aviation, Space and Defense Organizations

and the Small Agile Organizations That Desperately Need Their Contracts

RATIONALE

This standard has been written to incorporate ***EYESORE 9001: A SMARTASS' GUIDE TO ISO 9001:2008***. Aerospace snark was added to meet the unique requirements of the aerospace industry, which pretty much means Boeing. We specifically ignored the advice of the French, who still call their airplanes "buses."

This document is satire. Remember, if you can't laugh at yourself, who can I laugh at?

This document works best if you follow along with your official licensed copy of SAE AS9100C, available for purchase at www.sae.org. For every copy they sell, the SAE kills one less cancer patient puppy.

FOR MATURE READERS ONLY

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This International Non-Standard was published by Oxebridge Quality Resources International, a provider of AS9100 consulting and implementation services, and the only company in the world that has been banned by UL from using any of their certified electrical cords in the office. Copies of this document may be downloaded for free from www.oxebridge.com.

SAAE values your input. To provide feedback on this Technical Report, hand-write your comments on a piece of paper and carefully place them in the round metal bin next to your desk. Then wait.

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INTRODUCTION BY THE AUTHOR

In space, no one can hear you scream.

Outside the IAQG meeting rooms where they develop the aerospace standards, pretty much the entire neighborhood can hear you scream. Fortunately, they always hold these meetings near brothels (to boost attendance), so no one calls the cops.

The International Aerospace Quality Group, or IAQG, is responsible for the development of the AS9000 series of standards including AS9100, the internationally-recognized standard for quality management systems. While the IAQG had no official role in the development of ***this*** document, it did act as the inspiration. So I'd like to credit them equally, although not so equally that I have to give them any of my money.

Work hard enough in aerospace, and they give you a podium.

Note on the SAE: they only ***publish*** IAQG's standards, so I didn't harass them too much. But it says something that when the aerospace guys want to get standards printed, they have to ask their auto mechanic.

The real AS9100 is based on ISO 9001, which had been developed to be a universal quality management system standard. In fact, ISO 9001's authors (ISO Technical Committee 176) had a mandate from ISO to "reduce the proliferation of sector specific standards." You can see how well that went. The IAQG sniffed its nose at the dirty, unwashed users of "simple" ISO 9001 and forged ahead to make its own sector-specific version.

Elitists.

So what did they do to enhance ISO 9001 for the aerospace industry? Ironically, they just went back in and added some old requirements that appeared in the original ISO 9001:1987 standard, but which TC 176 had stripped out for ISO 9001:2000 to make more "universal." Aerospace guys may want to ***explore*** the universe, but they don't want to create a universal way to do it. Then they added a sentence about FOD to make it sound all aerospacey.

Maybe there's more to it, I am not sure. I never actually read AS9100. I just do consulting; I can't be expected to actually know stuff. There's a hierarchy to ignorance: those who can't, teach. Those who can't teach, consult. And those who can't consult get hired as auditors for QMS registrars.

In 2009, the aerospace prime OEMs (like Boeing, Lockheed, Honeywell and Starbucks) found that many of the AS9100 certified companies still… well, ***sucked***. So they put their anger on paper, and released an update called AS9100 Revision C, which (rumor has it) stands for "chagrined." Paired with some outright nutty auditor rules published under AS9101 Revision D, which I am pretty sure was a previously unpublished work by Machiavelli, the new standards shocked the aerospace world. Specifically, they shocked the registrars who, until then, had been sitting on their asses printing certificates as fast as their inkjet cartridges would allow them. With Revision C, the IAQG attempted to put teeth back into the aerospace standard. Because previous to that, their teeth had pretty much either been in a pastrami sandwich, or a glass on the nightstand.

So get what you can from this book, and if you work or invest in today's aerospace industry, take my advice: the future of spaceflight is private commercial enterprise, and the future of commercial aviation is the train.

Christopher Paris
March, 2012

Introduction:

Even Standards Need a Preamble, Because Standards Authors Have Delusions They Are Writing a Nation's Constitution

0.1 General: The One the Registrars Hate

This is the part that registrars never want you to read. In short, it says you can do whatever you want with your aerospace quality system, so long as you meet the requirements. If you can meet the requirements by writing a manual entirely in Gorn, then do it. Although you may have to provide a Gorn translator during your audit. Frankly, I have seen AS9100 audit nonconformance reports that must have been written in Gorn, because it sure wasn't English.

So tell the registrar to get over his ego and accept the fact that it's ***your*** company, not his. If he was smart enough to run a company, would he be working for a registrar? Please.

0.2 The Process Approach: Not a Sexual Position

The IAQG wants you to adopt a process approach. Well, not really. ISO wanted you to adopt this with ISO 9001:2000, and since the IAQG was too lazy to write a completely new standard, they left this part in, even though:

a) aerospace registrar auditors have no idea how to audit processes, even over a decade later,

b) aerospace primes don't really like the process approach, because it doesn't directly result in a 75% decrease in costs of the stuff they buy, and

c) all this talk of "inputs" and "outputs" sounds … well, kinda dirty.

Many people are confused by this, so let me clarify it in one simple paragraph.

A process approach to management is the way you manage your approach to processes. What are processes? Processes are the management approach you use to process your approaches, and it's usually done by management. Management processes the approach, and then the process approaches management by approaching it as a management process. In other words, management process approach process management approach process process management process… turtle.

Believe me, that is about as clear as it gets. But if you just throw the word "turtle" into any process approach discussion, you are golden. It's like a Mario Brothers PowerUp, it just hyper-boosts you to the final level of the game.

NOTE Unfortunately, these games usually feature a big boss battle, so in retrospect maybe it wasn't such a good choice of metaphor.

As if that was high-minded enough, this section of the standard also tells you that you ought to adopt the PDCA model of management. This stands for:

Philosophize: Planning is nice, but sounding important and meaning nothing is easier, and in the aerospace industry, it guarantees you a long career. Just make stuff up before you do anything, and use big words to do it.

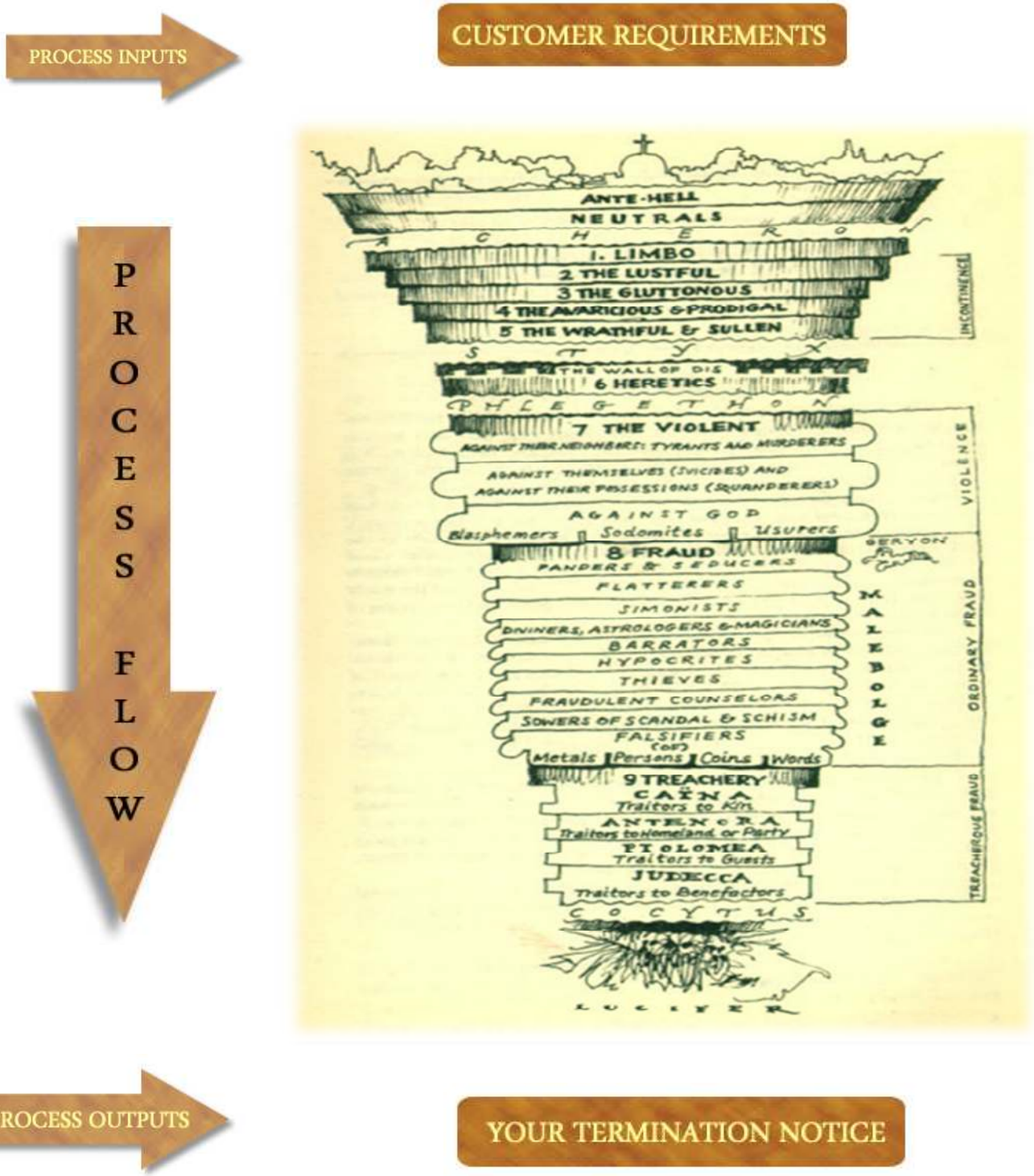
Do It: Take those big, heady words you wrote, and then do stuff that sounds reasonably close to whatever the hell it is you were talking about.

Complain: Don't wait for your subordinates or (heaven forbid) customers to find stuff wrong. Complain first. Even if there's nothing wrong. Just gripe a lot. This way when something hits the fan, your ass is covered.

Ascend: Now that you have convinced your boss that you are smart (see "P" above), organized (see "D" above) and critical (see "C" above), prepare to get promoted. It's the only way to succeed in aerospace if you aren't related to the boss.

Some have reported that a successful PDCA model is based on the theory "Pay Da Corrupt Auditor." That works, too.

Here's a handy diagram of the process approach to make it easier to understand.



1. Scope: More Than a Mouthwash

1.1 General

The goal of this standard is to define how to manage and improve your company because, let's face it, so far they've pretty much mucked it up. Don't believe us? Go ask your customers. The ones ***not*** busy suing your employer.

For AS9100, the IAQG just slathered on some additional requirements and then put them in bold typeface because they couldn't even pretend to come up with a totally new standard. The good news? Since the publication of AS9100, bold font prices have tripled. If you invested in Arial Black, you are now a millionaire. Sorry, Segoe UI Light, but you sorta had it coming.

But I didn't bother to follow that gimmicky font trick, so this way you have to read the entire thing to sort out the aerospace stuff from the ISO 9001 stuff. I'm a bastard.

AS9100 includes a weaselly disclaimer, saying that if anything in the standard contradicts "statutory or regulatory requirements," such requirements trump the standard. I guess when they wrote this they knew it was a pretty good chance that anyone actually following these rules would get sued or arrested. That's what happens when you write standards while snorting happysnow off a hooker's back.

NOTE Despite its name, "happysnow" is not a particularly joyful form of precipitation.

1.2 Apply This Standard Twice Daily, See If Swelling Goes Down

ISO really, really tried to develop this standard so it could apply to all kinds of companies in all kinds of businesses. As you'll see, they didn't do too good a job. You'll notice that about one-third of the way through they stop talking about service companies altogether, and they're pretty much still fixated on product inspections. The path to the future points backward.

AS9100 for the masses? Applicable to all sorts of companies? Please. The IAQG went in and added a clarification that AS9100 is "*intended for use by organizations that design, develop and/or produce aviation, space and defense products."* In short, they really don't want you anywhere near this standard if you (ugh!) manufacture products like firefighter protective gear, baby cribs or cancer fighting drugs. That stuff is just beneath them.

Turtle!

2. Normative Reference, or "Up-Selling"

As with ISO 9001, this section just includes an ad for ISO 9004, the standard you are supposed to use after you implement ISO 9001, to help improve your company. ISO reports that since it was first written, they sold four (4) copies.

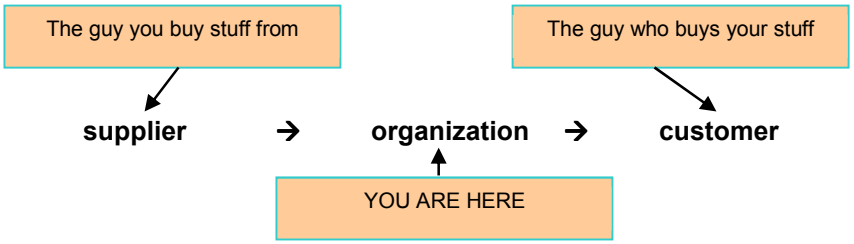
Now, the IAQG didn't bother to publish an equivalent version of ISO 9004, but if they smell a profit, don't worry – they will set a committee on it.

Since they've established a precedent for plugging stuff in standards now, I am going to write to the IAQG and see if I can get an ad for Oxebridge put in the next edition. Maybe a "normative reference" to ***DUMBAS9100***. Or maybe I can just change my name to Norm Ativereference, and sue them blind for infringement.

NOTE The author wishes to express his apologies to Norman Jeffrey Ativereference, whom the author subsequently learned actually exists.

3 Terms, Definitions and Euphemisms

Because ISO screwed up the definitions so bad in the 1987 and 1994 versions of the standard, let's start over.



Here's another way to look at it:

With AS9100, they added some new terms:

Risk – *"An undesirable situation or circumstance that has both a likelihood of occurring and a potentially negative consequence."* See also "CEO hitting on that new intern."

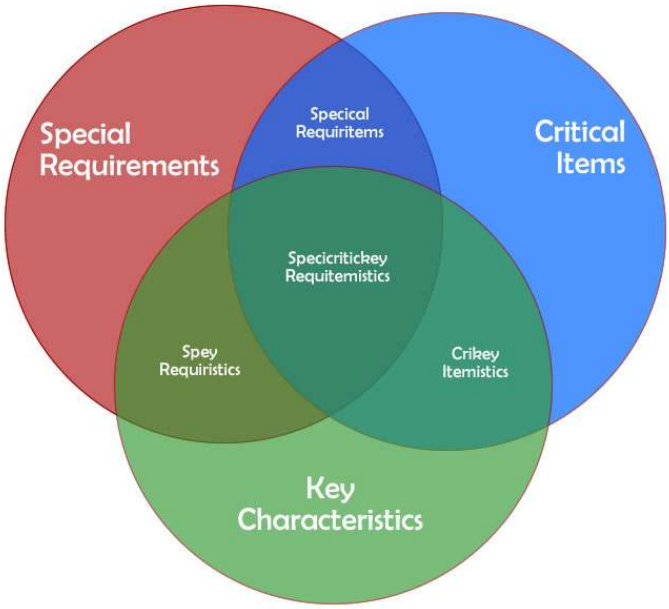
Special Requirements – see "critical items" below.

Critical Items – "key characteristics" below.

Key Characteristics – see "special requirements" above.

Seriously, no one can tell the difference between those last three. If you really want to have fun, ask two registrar auditors what the definitions are. It's like using a multi-line phone to patch a call between two 7-11 gas stations, and listening to them argue over who called whom.

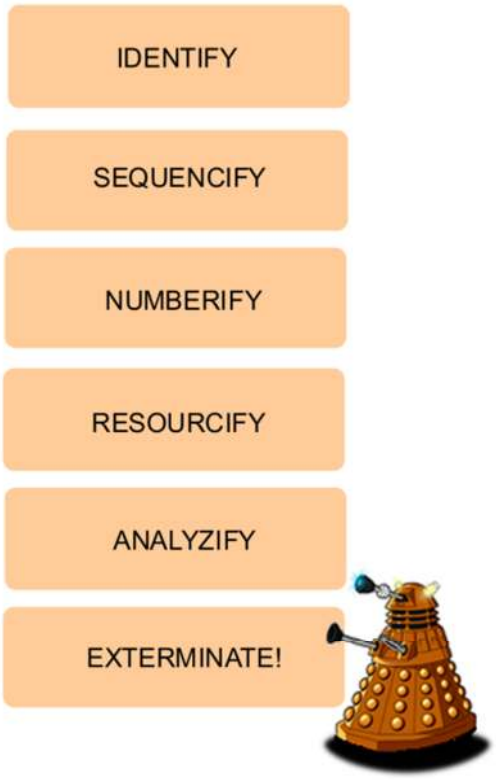
One final thing: when they say "product," they also mean "service." Also, when they say "service," they just mean "service." When they say "shall," they mean "must." And when they say "must," they mean, "unless otherwise contradicted by the Honeywell SPOC Manual."



4. Quality Management System: The Auditable Parts

4.1 General Requirements

Now comes the fun. Sections 4 through 8 are the parts auditors can eviscerate you with… er, the parts that are auditable.



This opening section is all about the process approach. We discussed this already in 0.2, but this is where the actual requirements are defined.

There are a lot of consultants out there who don't know squat about processes, but will insist their way is the only way. Don't listen to them. If they knew what the "process approach" was, they'd be successful, not sitting in some dim Unabomber cabin with a bad tie and a worse stink. This is all you have to do to manage by processes:

a) First, identify all your processes. How you do this is your business. Again, if an auditor comes in and tells you otherwise, tell him to "bite me, dimplestick."

NOTE "Dimplestick" is not an aerospace industry term.

b) Once you've identified the processes, make a big map of how they interact. Use those thick magic markers for real effect. Have your kids help with their finger paints. Try a postmodern cubist approach, or perhaps a Seurat-inspired Impressionist method.

c) Now you've got to figure out how you're going to manage all those processes. That means you'd better come up with some metrics, which is consultantspeak for "numbers." Figure out a way to:

   — know when your processes have crapped the bed

   — know when they're purring like a new kitten

   — know when they are purring like a kitten who just crapped the bed.

d) Whatever you decide, you'd be better be able to measure it, because they're gonna ask you to do that in a few seconds.

e) Have the boss give you all the resources you need to carry out each process adequately. Heh. Good luck with that one. The authors just threw that one in because they are sadists.

f) Time's up. Now it's time to measure the processes against those metrics I mentioned!

g) What's that? The metrics prove your processes suck? Fix 'em. That's what you're getting paid 5 bucks an hour for.

Now if you try to weasel out of this part and "outsource" your processes, you still have to identify them and prove that you have some kind of control over those lazy bastard child laborers your company hires.

4.2 Documentation: Because the Adequacy of Your QMS Is Measured by Page Count, Not Process Effectiveness

4.2.1 General Documentation Stuff

So many of you griped about the "big honkin' binder," ISO TC 176 got nutty and cut all the documentation requirements out of the old standard. But the IAQG wasn't going to let that stand, and restored a few documentation

requirements, but to make it like a game, they use words like “define” instead of “document”, so you really have no clue what to document now. They feel everything should be as complicated as a 777 glass cockpit display.

According to this clause, all you need is:

a) A quality policy and objectives (consultantspeak for “goals”)

b) The really massive quality manual, because aerospace buyers won’t approve you if it’s less than 40lbs

c) The six procedures they still just can’t bring themselves to part with, all of which (coincidentally) are the consultanty ones. You’ll have to buy a lot of books published by TC 176 guys to understand it all. Win-***win!***

d) Anything else you want to write about. Go crazy. It’s the page count that matters, not the content. For instance, my left leg is shorter than my right. Really. Turtle.

e) All the required records they talk about later, but don’t list anywhere because that would make it too easy.

The IAQG did add one point: you can’t just write the procedures, you have to actually make sure you *give* them to the people who need them. I know, right? This means you will actually have to interact with those foul-smelling troglodytes in Shipping. Ugh... pass the Purell.

4.2.2 The Ubiquitous Quality Manual, or “How to Suck the Joy Out of Admiring Airplanes”

For ISO 9001, your quality manual can fit on 3 or 4 pages. For aerospace, if you try that trick you will not only get your company de-listed from Lockheed’s approved supplier database, you will be branded for life as a malcontent and listed as a sex offender.

Get this straight: the aerospace primes – the ones demanding you get AS9100 certified to begin with – like ***really big*** Quality Manuals. But don’t worry: they never actually read them, they just break out a ruler and measure the thickness. Registrar auditors never really read them either, despite the fact that you pay for a “document review” during your Stage 1 AS9100 audit; that’s why they never seem to understand your processes which you so carefully defined in the manual. So go ahead and cut-and-paste *lorem ipsum* filler text on 600 pages, and they will never notice. Maybe use “the quick brown fox jumped over the lazy dog” over and over. Or just shove *Anna Karenina* in there. Whatever works.

Whatever you do, technically the manual must include:

a) The scope of your quality system, and a pretty darn good excuse for any clauses from Section 7 you’ve decided not to include.

b) A list of the documented procedures you’ve written. Use hyperlinks, so when the auditor is reading the paper copy he can’t verify anything. I love watching them push their fingers on the blue underlined words, expecting something to happen.

c) That big map you drew up in clause 4.1.

So, again, aerospacers: make sure you include all of the above, but somehow make your manual 600 pages. Try a 7,000 point font.

And use the word “turtle” a lot. Trust me.

4.2.3 Document Control… Wait, *What*?

Decided to document the heck out of your company? Good boy and/or girl, that’s called job security! There is a down side, of course. Now you have to *control* all those documents. You’ve heard of herding cats? This is like herding cats that are all strung out on meth, and the only tools you have are greased marshmallows, KY Jelly and a severe cat allergy.

To make matters worse, you'll have to write a documented procedure on how to control documents! And that has to be controlled, too! So it's like making a chicken that can hatch an egg to make the chicken. And then being told you can't eat either one, because your damn doctor has you on a lettuce and chalk diet.

Whatever. Just be sure your document control procedure requires that documents:

a) Be approved (*before* you release them).

b) Be reviewed and updated occasionally. Blow the dust off, and all that.

c) Be marked with the changes somehow. Use yellow highlighting, and then print it in black and white.

Also, you must:

d) Make sure you give people the latest versions of documents. Duh.

e) Make sure the documents are kept clean so people can read them. No coffee stains, goo blobs or smartass comments written in the margins. Let's at least try to *appear* professional.

Got documents you borrowed from a competitor, or downloaded illegally from bittorrent sites? Guess what:

f) Gotta control them, too.

And finally,

g) If you have any obsolete documents, be sure to use them *a lot*. Make sure everyone else uses obsolete documents, too! After all, documents are like wine, and get better with age, right?

Wait, no… Do the opposite.

4.2.4 (Broken) Record Control

You must have records because without them, the entire AS9100 auditing industry would perish and thousands of jobs would be lost. Consider each record your own little way of supporting the nation's economy, and preventing a flood of ill-tempered, poorly educated aerospace auditors from suddenly showing up as your grocery store clerk, or ready-to-spit-in-your-food busboy.

There are a whole bunch of places throughout this standard that call for records, but to make sure you read the whole standard word-for-word, they decided not to do the smart thing and list all the required records right here. Now you'll have to search through the whole bloody document! And you thought they didn't have a sense of humor? Sure they do. Just like de Sade had a sense of humor when he beat nuns with leather straps while reading them insufferable prose.

Where you *do* find the little breadcrumb trail of required records, you're going to have to make sure the records are legible (no coffee stains), identifiable (try naming each form something) and retrievable. That last part means don't store them over a pit of ravenous wolves where the auditor can't get to them.

Oh, wait. Totally do that. Then upload the video because I know a lot of other people who would love to see that.

To make things more complicated, and to ensure a steady revenue stream by way of "flowdown of requirements," the IAQG added an aerospace rule that you must also control any records "maintained by suppliers." Again, no two auditors agree on what the hell this means. Some auditors have gone so far as to say that even if your supplier sends you the records, if they happen to keep an original – and that's pretty much any supplier you will ever have – *they* have to control the records, too. Yes, it's nuts. Welcome to aerospace.

Also, you must have a documented procedure on how you plan on controlling these little buggers. Specifically, that means how you identify them, store them, keep them safe, retrieve them, retain them and throw them out when you're done with them. Please: no correction fluid. You can use it on your monitor all day long, but don't use any on quality records. Makes you look suspicious.

For guidance on how *not* to control records, contact the auditors at Arthur Andersen, LLP.

5. Management *(chuckle)* "Responsibility"

5.1 Having Your Top Management Committed

The original authors of ISO 9001 really had no clue of the obvious joke they walked into when they named this clause "Management Commitment." Really. No clue.

They also didn't realize it was probably not a good idea to put this in Section 5, rather than open up the standard with it as Clause 4. I guess they thought that if you drew up complicated process maps, documents and records (as part of Clause 4), then by that time management would have to "commit" to the QMS since they'd already spent so much money.

In retrospect, that's pretty clever.

Anyway, other than having your managers tased and dragged screaming to a room with quilting walls and regularly given little red "calming pills," here's what this section wants you to do:

a) The boss must take this AS9100 thing seriously. OK, he can giggle like a schoolgirl sharing Twitter secrets whenever he hears the word "quality", but so long as he can keep a serious face on during an audit, everything's golden.

   If he *can't* keep a straight face, consider having him wear a mask during audits. No, not that one of Guy Fawkes. Someone *not* smiling. Maybe the Kirk one from the *Halloween* movies. Hell, if he carries a machete during the audit, people will definitely take him seriously. Consider writing "machete for use on boss" in as a line item on your next budget.

NOTE If the boss in question is female, a Kirk mask may not be such a hot idea. How about a burka? Very trendy in the aerospace industry, since Saudis are the only ones buying airplanes these days, anyway.

b) The boss also has to write a quality policy (more on that later), and tell everyone in the company how important the customer's needs are. That non-smiley-mask is more important than ever for this task.

c) The boss also has to set some kind of quality objectives. Or, rather, *you* have to and then sign his name to them. More on that later.

d) He'll also have to give the appearance of *caring* at least a few times a year at a management review meeting, or something like it. I'll get into that in a minute, but at this point you will not only need the non-smiley-mask, but duct tape so no one can hear him laughing under the mask.

e) The boss will also have to occasionally open the purse strings and provide adequate resources to support the management system. Screw it. Never mind the non-smiley-mask and duct tape, just lock him in the basement and take his money. Spend it how you like. You're never going to get a boss to comply with any of this feely-goody-fuzzy-warmy junk, and the authors knew it, they just had to put it here to make themselves sound compassionate towards customers.

5.2 Customer Focus: Associating the Word "Customer" With an Entirely Different F-Word

Most cameras these days have an auto-focus feature. They really need to invent one of these for senior managers.

Until then, you have to do something to make it look like you care about your customers, and I don't mean just the hot MILF from that one supplier who you swear must never be able to wear the same sweater twice, because there's no way she can get them back into shape after stretching them and…

Ahem.

That joke was for the men and lesbians. In the interest of fairness, and ensuring the universal applicability of this standard per international guidelines, allow me to offer an alternate off-color joke for women and gay men:

Until then, you have to do something to make it look like you care about your customers, and I don't mean just the hot stud sales guy from that one customer whose pants are so tight you can tell he waxes because there's no way a single leg-hair wouldn't show through those gabardine slacks, and …

You get the idea. Anyway, what was I talking about? Oh, customer focus. Sorry, I wandered off a bit.

Because the ISO TC 176 team had already fallen asleep from too much warm milk and early bird special turkey at The Clock restaurant, they pretty much punted on this clause. The IAQG, never one to shy away from adding detail where it isn't needed, threw in some "meat" to this clause. Now, in order to show "customer focus" you have to measure two things:

- **On time delivery:** how often you ship stuff actually on time, which is moot since the aerospace primes routinely change ship dates long after they sent in a PO, usually just a day after they wanted it delivered, so your OTD will never get above 1% anyway.

- **Product quality:** some kind of metrics on your ability to make product, such as your crap rate… er, I mean *scrap* rate. "Crap rate" is the measurement used by HR for employee evaluations.

Of course this is absolutely hilarious, since the only real metric any aerospace OEM cares about is *cost*, but the IAQG wasn't about to go down that road and potentially embarrass itself with, you know, reality.

5.3 Quality Policy: Sum Up Your Top Policy in Your Own Words, But Use Our Words to Do It.

Hey, remember the quality policy I mentioned? Well this clause elaborates on that. The boss has got to put his or her philosophy about business in writing. I suggest getting them drunk first. Or more drunk, as the case may be.

NOTE This might be a good time for the "happysnow" mentioned in Clause 1.

At the very least:

a) The quality policy must be somehow connected to reality. That means it should have something to do with the company. A quality policy that says "I rarely wear pants," while possibly accurate, is not a good idea. "*Lasciate ogne speranza, voi ch'entrate*" might be more apt.

b) It must restate the company's commitment to quality and improvement. Use MadLibs if you have to, for this one. ("Boss, I just need a noun. Any noun! Put down the ball of yarn, and give me a noun.")

c) It must provide some kind of philosophical grounding for your quality objectives. So only say stuff you can measure. Something like "our products kick ass" would probably not be the best thing, unless your products literally kick asses.

d) The quality policy must be printed on little cards and given to each employee so that if the auditor asks them, "What's the quality policy?" they can fumble around mindlessly! Actually, it would be better if you actually *taught* everyone the policy so they understood it, but talking to those dirty, lower level workers is beyond your job description. And cards are cheap.

e) Finally, the quality policy must be reviewed occasionally. The boss won't remember it anyway, so it will be new to him each time.

5.4 Planning, or Justifying Why You Had Your Door Closed for the Last 3 Hours

5.4.1 Quality Objectives: Today's Equivalent of Royal Proclamations

The boss has to set some kind of goals for the company. They should include goals for on-time delivery, product quality, and the top dollar limit for Christmas gifts sent to Boeing buyers.

Make sure each area in the company has objectives. The crushing depression of charting one's failure to live up to expectations should be shared, don't you think?

Those objectives better be measurable, too. To make things handy, here are some suggested objectives which you can actually measure:

- **Don't be a jerk.** They can measure that by use of hidden cameras.
- **Don't steal office supplies.** They can tell by doing inventory.
- **Sell whatever you can, as fast as you can.** They can measure that by how fast you sell whatever you can.
- **Never pay vendors on time.** Paying on time is for shlubs. It's not an accident that typical payment terms include the word "net" in them, because they entangle your supplier in debt.
- **Deliver on time.** OK, OK, I just put that last one in as a joke. I mean, really. Who does that these days? Technically, it's "5:00 PM yesterday" some place in the world, right? Hilarious.

5.4.2 QMS Planning, Or Something Resembling It

This clause suggests that you plan your quality system ***before*** you implement it. Right. Like some new startup company is going to put AS9100 in place first, and then open shop. The irony is that AS9101 auditing rules require a company to be in business for a year before it can be certified to begin with. So unless your aerospace company plans to build a Tardis, you're screwed.

Well, now that you've already started selling your stuff, you might as well plan the quality system after the fact. In order to retro-plan properly, be certain to:

a) … use the process approach and objectives. Obviously, I can't repeat myself enough. Turtle!

b) … update the quality system if the company changes. Boss busted for an illegal Caymans account? Make sure you update the org chart! Company diversifying into the manufacture of crystal meth? Be proactive and be sure the "Control of Records" procedure has adequate controls to prevent the cops from finding out!

5.5 Responsibility, Authority and Communication: Big Words, Zero Impact

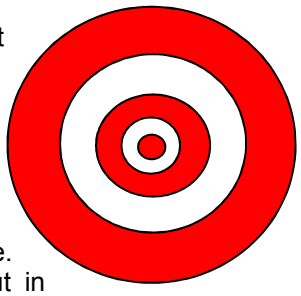
5.5.1 Responsibility and Authority – Separated At Birth?

Machiavelli wrote, *"It is much more secure to be feared than to be loved."* While you ponder the relevance of that, let's throw in this requirement:

The boss has to be sure to give everyone both the responsibility ***and authority*** to do their jobs. It means that management can't just tell people to do stuff, they actually have to make sure everyone else respects them when they try to do their job. I don't know, sounds sorta Communist to me.

Turtle!

5.5.2 Management Lackey



In order to facilitate the third-party auditing process, and to make sure that auditors don't have to deal with too many of those fungus-fingered workers in the back, the boss has to assign someone as the quality system "Management Representative." Besides being a snappy dresser, eloquent speaker, and completely up to date on prescription antidepressants, the Management Rep must:

a) Ensure that the quality system processes are established, implemented, and maintained. This means if the company flunks the audit, the boss has someone to fire. Sort of does away with that whole "management commitment" thing we talked about in clause 5.1, doesn't it?

b) Write lots of reports with colored graphs for the boss, so he can see how badly the company is really doing. Use small words.

c) Cheerlead, cheerlead, cheerlead. ***Rah rah!***

5.5.3 Internal Communication or, Failing That, Internal Combustion

For most bosses, the definition of "internal communication" is how to respond to their stomach growling at 11:00 AM. Well, now they have to make sure there are formal processes for communication within the organization. And no, the "suggestion box" with the seven years of dust on it doesn't count.

Because when the auditor walks around asking people about AS9100, they'd darn well better know what they're talking about!

5.6 Management Review, or Getting Together Once a Year to Make Sure the Liquor Cabinet in the Conference Room Hasn't Been Tampered With.

5.6.1 Management Review: Prelude to an Afternoon of the Fawning

You've got to figure out a way to get the boss to look at all those numbers you've been collecting for the past year. Have a meeting! You will note that nowhere in the AS9100 standard does it prohibit you from having the meeting at a girlie bar or on the back nine! Heck, that's where they wrote most of this standard.

The boss has to periodically review the quality system. What does "periodically" mean? Whatever your allegedly-objective-and-not-allowed-to-consult AS9100 registrar tells you. And that review must include some suggestions for improvement, like "we really need to get a new AS9100 registrar."

Not only that, but documentation. You actually have to keep records. If your written procedure specifies that all such records must be recorded on the inside of empty 18-year Glenlivet bottles, things will go much smoother. Silky smooth!

5.6.2 Review Inputs: Things You Need to Legitimize the Meetings

Because the gang was feeling particularly caffeinated the day they wrote this part, the authors really got into the spirit of imposing their will and included this list of mandatory management review requirements. During the review, you must look at:

a) How bad your audit program is screwed up.

b) All those customer complaints piling up near the fax machine, and stuck under your car's windshield wiper.

c) How your processes are doing, and how your product is doing, and… turtle!

d) The status of the corrective and preventive action system (more on that later)

e) Stuff you didn't finish at the last meeting. Procrastinator!

f) Changes that could affect the quality system or, more importantly, the contract you have with your registrar so they can justify their next rate hike.

g) Suggestions for improving the company… but nothing requiring any effort. Don't get crazy.

5.6.3 Review Outputs: Things You Need to Prove You Actually <u>Had</u> a Meeting

You need to get ***something*** out of that management review debacle. Preferably it should be decisions and "action items." I love that last one. Sounds so James Bond!

"Miss Moneypenny, I am off to conduct an action item!"

"Oh, James! Don't forget your Walther PPK! And wear your rubbers!"

"I always do, Moneypenny. I always do."

Anyway, those decisions and action items *(cool!)* should be related to:

a) Improving the quality system (extra points if you can do this without admitting you screwed it up in the first place).

b) Improving the product (See diagram at right).

c) Resources. One exception: if the boss blurts out his desire to lay off half the workers so he can buy a Maserati, you might want to leave that out of the minutes.

d) Bathroom breaks. Let's face it. After all the drinking in the meeting, the first place anyone is running to after the meeting is the bathroom. That's where all the real management review activity is happening anyway.

NOTE This is a *triple* entendre. You're welcome.

6. Resources: Things That Drain Your Finances

6.1 Provision of Resources: Get Wily

You can't get what you don't ask for. Even your boss, omnipotent as he may be, isn't clairvoyant. Besides, in order for him to read minds, you'd have to actually have a mind, and -- face it -- you weren't hired for your smarts.

If you need resources, you'd better figure out what they are and then get the boss to provide them. The best way is to trick him into thinking it was his idea all along.

Table 6.1 A: REQUESTING RESOURCES

WRONG WAY! 	You: "Boss, I need a new lathe to be able to machine those parts to tolerance!" Boss: "You're fired!"
RIGHT WAY! 	You: "Master, I am so pleased to again be in your presence. Allow me to bow and remove my clothes so that you may whip my raw back more easily. Once the skin is flayed, I will lay it on the ground so you may walk on the filthy floor without soiling the bottoms of your shoes. I appreciate your torture, and I look forward to the day that you are able to hone my limbs down to sticks using a HAAS multispindle CNC lathe with auto tool loader." Boss: "Buy it!"

"Resources" include stuff needed to:

a) …implement, maintain and improve the quality system. Start small. Maybe a jar of free peppermints at the receptionist's desk, artfully arranged.

NOTE Arrange the mints, not the receptionist.

b) …boost customer satisfaction. Technically speaking, this could include sending cheap beer and free cigarettes to the customer's hotel room. Or sending ***yourself*** to their hotel room, wearing only the heady aromas of cologne and self-loathing. Whatever works!

6.2 Human Resources, or "We've Hired These Creatures, Now What Do We Do with Them?"

6.2.1 Sub-Human Resources

While I personally like the term "human capital," the guys at the IAQG thought that was a bit impersonal. They batted around "Human FOD", "Breathing Meatbags," and "Freed Slaves," but none of those stuck. So instead they called this clause "Human Resources."

Basically, they want you to make sure the people you hire are competent. Now, you have to understand that "competence" is defined as "those skills and abilities which do not exceed those of one's manager," so you'll have to wrestle with how to define that for each position in your company. Hiring knuckle-dragging hunchbacks to do delicate brain surgery might not be any smarter for you than it was for Frankenstein.

6.2.2 Three More Big Words: Competence, Awareness and Training

Hired those hunchbacks anyway? Well, now you'll have to train 'em. Here are the rules:

a) Figure out what they have to do.

b) Train them on it.

c) Evaluate how they're doing after training.

d) Beat the performance out of them. No, just kidding – beating employees leads to repetitive motion injuries for the poor guys doing the beating. Instead, make sure everyone knows how their work affects the customers, and that if they screw things up it's not just their jobs on the line, but the jobs of the customer's equally hunchbacked knuckle-draggers.

e) Oh, and your people should know their quality objectives. Since they don't know what they are, good luck with that.

f) Finally, you have to keep records of training. Keep them separate from the personnel file so the auditors don't see all the sexual harassment and OSHA violation lawsuits the employees have going against the company.

6.3 Infra-*what?*

Nobody on the ISO Technical Committee knows how the word "infrastructure" got in here. They think it was a bad translation of some French word, but no one's sure. It's like the word "paradigm." Everyone with an MBA uses it, but nobody knows what it means.

Turtle!

I think "infrastructure" has something to do with making sure that you give workers:

a) A place to work, preferably with air, lights and running water. I know… *quaint*, right?

b) Equipment to work with, to justify those capital equipment deductions.

c) Other services like candy machines, impossibly narrow "Employee of the Month" parking spaces, and bathrooms. Or use a hastily dug hole in the back parking lot for all three.

6.4 Touchy Feely Work Environment, or "Night in the Box!"

Under 6.3 Infrastructure, we discussed the workspace. Now we are talking about the work ***environment***. What's the difference? Two additional syllables!

Suffice to say that you have to provide an adequate work environment. And what, exactly, is "adequate?" Up to you! After all, Papillon's prison managers felt a tin box baking in the hot sun was an adequate working environment, and no one griped. If they did, they got more box-time.

Something to consider. Just throwing it out there.

Actually, the only thing AS9100 is concerned about is whether the work environment is suitable for the product. If you can get guys to work in hotboxes, and the product doesn't melt, then it meets AS9100 requirements.

7. Product Realization, or "Making"

7.1 Planning of Making

Well, we've made it to section 7 already. Remember, you can exclude any clauses in this part that don't apply to your company. Or your warranty agreements. Or ethics.

They should have called this "Product ***& Service*** Realization," but most of the ISO TC176 guys are former manufacturing executives, not service sector guys, so what did you expect? Maybe in the next ten years they'll get it right. Or not.

NOTE It's been about ten years since the original "Eyesore" document was published, so... Definitely ***not.***

Anyway, as part of planning of product realization, you'd better develop the processes needed, like they've said umpteen times already. Also, you have to:

a) Come up with objectives and requirements for the product. If you can't, go on the internet and find out what your competitors are doing.

b) Create processes and documents for the product, and make sure you get the necessary resources. I know, … broken record.

c) Figure out how you're going to inspect the stuff. Or measure the process instead. Or test the finished product. Whatever. Just look busy!

d) Keep records so that you can prove your processes work, and that the product passed inspection. This will help when the customer asks you why his parts arrived broken, and you know darn well his receiving guy did it.

e) "Configuration management appropriate to the product." I usually charge $1,500 to explain this to companies, so here's the free version: *it's complicated.*

NOTE You get what you pay for.

f) Figure out what resources you need to "use and maintain" the product. Treat the product like your spouse. No, wait, don't do that!

7.1.1 Project Management, or Getting Paid to Make a Big Deal Out of Everything

Speaking of spouses, remember when he/she yelled at you, screaming, *"Why do you have to make everything such a **project**?"*

That's pretty much the IAQG. After all, their AS9100 database "OASIS" stands for "**O**vercomplicating **A** **S**imple **I**nspection **S**ystem."

Anyway, this clause requires you to manage your activities as if they were really complex, agonizingly multilayered "projects". In writing the clause itself, IAQG applied a project management model, which is why it resulted in the sentence, "plan and manage product realization in a structured and controlled manner to meet requirements at acceptable risk, within resource and schedule constraints."

NOTE Right now, a plucky IAQG lawyer is scouring precedent to see if, by using that full sentence, this document breached the Fair Use Clause and they can sue for infringement.

But like other clauses in the AS9100 standard, you get to apply this where you like. So don't get too crazy getting your staff PMP certified. (There's no "I" in it. Pervert.) It's likely that if your company has project managers, then this clause

applies to you and what you are doing is fine. If you don't have project managers, you probably don't need them, so you can ignore it.

Remember, a "project" is not a "process." How can you tell? First, they are spelled different. Second, a "process" has inputs and outputs; a "project" only has inputs, since no one ever finishes one.

7.1.2 Risk Management, or Getting Paid to Freak Everyone Out

Diagrammatic risk assessment on the risks associated with making diagrams.

Ahh, risk management. Every consultant loves this subject, because it's an opening into an unlimited gush of client dollars. Risks are inevitable, ubiquitous, and recurring. You can never really get rid of them, so it's a job that never ends. I bought my first two boat captains from risk management consulting contracts (They came with the boats.)

Bowing to pressure from registrar auditors who pleaded for a requirement that no client could ever satisfy, thereby guaranteeing a steady supply of nonconformities and subsequent re-audits, the IAQG added this clause. It says you must have a risk process, but this clause doesn't say for what kind of activities in your company. Elsewhere in the standard, though, they keep mentioning risk, so wherever you see it, these rules apply.

When doing risk assessments, they want you to:

a) Assign ~~blame~~ responsibility.

b) Define your risk criteria; things like "how likely is this risk to happen" and "if it does happen, how likely am I to get out of the parking lot before security shoots out my tires?"

c) Then go ahead and actually identify risks. How? Make stuff up. Think scary. Everything is a risk, so you shouldn't have problems here. For each risk you identify, assess it (think about it, once you stop snickering because you thought I wrote "asses") and come up with ways to manage them.

d) Come up with ways to "mitigate" the risks. I don't really know what "mitigate" means, but I suspect it's a political scandal, because they always throw a "-gate" on the end of those.

e) After you've mitigated, then you have to document how you accept any remaining risks, which is basically a concession to the fact that risk mitigation never really works.

7.1.3 Configuration Management, or Getting Paid to Confuse the Fuck-All Out of Everyone

As I mentioned earlier, "configuration management" is really complicated. Here's the brief rundown.

Some parts are made up of smaller parts. And those smaller parts can sometimes be made of even smaller parts. "Configuration management" is the way you make sure you know:

- What smaller parts get put together to become medium parts
- And what medium parts get put together to make big parts

If you use the wrong smaller parts, then the entire thing is screwed up, because you've just built an airplane using pieces of a bird nest. So you have to make sure all the parts, no matter how big or small, are properly identified, and that drawings or other documents clearly tell you how to build up those small parts into big parts.

Speaking of big and small parts, I hope you appreciate the fact that I did not burden you with the obvious penis joke. If I did that, it's just a slow crawl downward to smashing watermelons with big mallets, and wearing rainbow suspenders.

7.1.4 Control of Work Transfers, and Shut Up About Not Having a Window Already

Under previous AS9100 standards, this clause was real simple. If you temporarily moved your production someplace else – like the parking lot, while the plant was being investigated for human trafficking –you had to make sure all the AS9100 QMS rules followed you to the parking lot.

If your rules said, “don’t work in the parking lot,” then you were pretty much screwed.

Under AS9100 Rev C, however, the IAQG got nuts. They didn’t just drink too much coffee the day they revised this clause, the smoked it, then blew the inhaled caffeine directly into hypodermics, and injected it back into their veins. Then they smoked crack.

Now “work transfers” has been expanded to basically mean any time you move stuff… anywhere… no matter what … no matter between whom … no matter what planet. Now it applies not only to temporary moves to the parking lot, but also when you move stuff between departments, to your supplier, back from your supplier, between suppliers, and in and out of secret bank accounts. In fact, if you move your stapler from the left side of your desk to the right… this clause applies.

Whenever you do transfer work, you have to make sure you have a defined way to enforce the QMS at the new location to ensure quality remains consistent. Consider packing each part with a really tiny concierge.

7.2 Customer-Related Gobbledygook

7.2.1 Translating Customer Requirements into Human

Remember the customer? That’s the guy who pays you. He’s the guy who keeps showing up to do audits even though his company promised that if you got AS9100 certified, they’d stop it, and let the registrar do the job for them. Well, they don’t trust those registrars either, so every year you’re stuck with more audits than the last.

Anyway, before you go building anything for your customer, you should at the very least:

a) Figure out what ***he says*** he wants,

b) Figure out what ***he thinks*** he wants,

c) Figure out what the government wants you do to with what he wants because, you know, they have to have a say in everything.

d) Figure out how the hell you’re going to make it.

7.2.2 Reviewing Their Idiotic Needs

Getting the requirements out of your customer is only half the trick. Now you have to review them, to ensure:

a) You really got everything written down after all, and haven’t forgotten anything important.

b) Whether the customer arbitrarily subtracted a few hundred bucks from the price you quoted, so you can call him out on it.

c) You really ***do*** have the ability to make the stuff, and your smug Sales guys weren’t lying this time.

Just to be safe, keep records of all this.

Now, sometimes the customer won't actually give you anything in writing. Hey, they know the pitfalls of putting stuff in writing, too! Well, in those cases, you'd better write it down and get a confirmation before you start work.

And because the customers are probably suffering from Adult Attention Deficit Disorder, sometimes they will call you up and change things on a whim. If so you've got to run around and change all the documents in the shop. Wear good sneakers.

A little clarification for you aerospacers. In the AS9100 world, the customer is king. That's because the customer is an aerospace prime, and they wrote the AS9100 standard, so they made damn sure their interests are the only things represented in it. And somewhere in the small print it actually says, "You ***will*** strike your banners and bend a knee, lest we smite your men and enslave your women." Seriously, go look.

In real life, what this means is that contract review is just a puppet show. No matter what you do, eventually you ***know*** you're going to sign that 455-page Sikorsky LTA contract, and you ***know*** that they are going to drop in parts on their overnight ship list, automatically marking them as overdue even though you never agreed to them because they never mentioned it in their original PO, but no matter what they are going to ding you as "Piss Poor" on the OTD report and send an army of angry inspectors to find out what's wrong with you, never thinking that they might want to stop their idiot buyers from ignoring your standard lead times and negotiated delivery schedules, because they make helicopters and wear fancy jumpsuits and people salute them at airports, and they get to jump in line at Starbucks and you're just a supplier, you pathetic, filthy, unwashed….

…. gasp…. Sorry. I ran out of air on that one.

Here is one of the first clauses to suggest you do risk assessments according to 7.1.2. Maybe it's useful to determine and mitigate your risks before you accept a job. Maybe it's not useful. Or, maybe it would be useful but you choose not to do it anyway. Risky!

7.2.3 Customer Communication, or "You Can Call Him an Asshat *After* You Hang Up."

If you thought talking to your employees was rough, just imagine having to talk to the customers! Yuck.Well, choke it down and just do it. Make sure you have ways to handle the following types of customer communications:

a) Product questions.

b) Order questions.

c) Complaints, grunts, whines, exhalations, snorts, and other bodily sounds born of desperation or poor diet.

7.3 Design and (Arrested) Development

This clause is commonly called "D&D" because it was written as if the authors were scrawling it on hasty parchment during a siege of angry Orcs flooding down Mount Gundabad. That, and because most product engineers have moved away from old drafting tools such as protractors, slide rules and graph paper, and now design products using cutting edge 3D technology, like a 20-sided die.

7.3.1 Design & Development Planning: Think Before You Break Out the Colored Pencils

So you really think your team can design stuff? Okay, but don't blame me if you make something that accidentally releases anthrax at a kitten farm run by disabled, single-mom, volunteer fireman babies.

If you are dead-set on designing, you might as well bite the bullet and design it right. Unless you are designing a bitten bullet, in which case you're probably finished after you bite the bullet, and can skip this step.

Otherwise you'd better *plan* your design activities first. This means:

a) Figure out all the steps necessary for designing things.

b) Figure out how to review the design at each step before it all hits the fan.

c) Figure out who's responsible for what. You don't want that new 13-year old CAD engineer designing your rocket engines. Unless he's the boss' nephew.

Make sure everyone in the design activity knows what their responsibilities are, and who they answer to. Designers are notoriously ill-tempered and have poor people skills. Try to manage around that. Hold design meetings in Azeroth. Wear a helm.

AS9100 wants your design guys to define the design "stages" very carefully, and then take each stage and define what tasks are going to get done, what resources are needed, and how design will actually be done. They want you to think about antiquated concepts like safety and legal requirements. Seriously! You know these guys *still* write their mommies on Mother's Day.

Like Rolls Royce actually ever planned their design of a jet engine? Please… we all know they grow them on trees, then slap them onto a wing.

Turtle!

7.3.2 Design & Development Inputs: Stuff You Need to Look Like a Professional Engineer

Here's what you'll need to answer, at a minimum, to get started in designing:

a) What's the darn thing supposed to do?

b) What kind of legal or government trouble awaits you if it blows up?

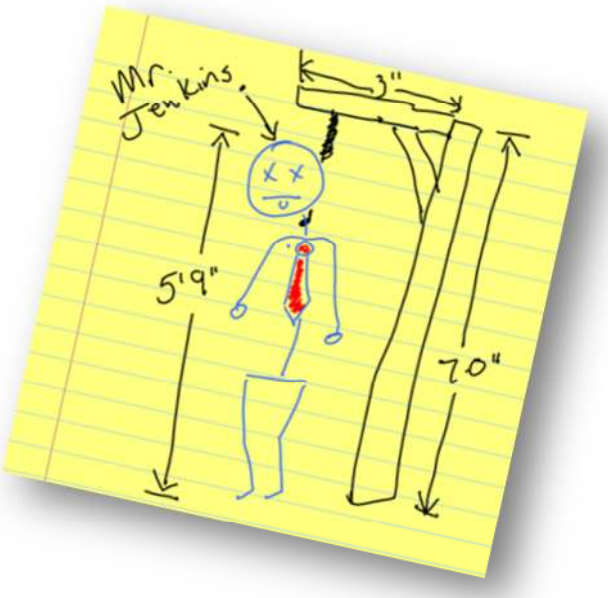
c) What did the screwups from your last design teach you?

d) What other things are you forgetting?

Once you've answered these questions, review them to make sure they're complete and don't conflict with each other. If the list of requirements includes "must sink like a stone" and "yet must also float like a feather," you might be in trouble. Plus, it sounds like your college poetry.

7.3.3 Design & Development Outputs: Stuff You Need to Make Your Desk Look Busy

"Outputs" is a fancy way of saying design drawings, or some other kind of written thingamajig. How you do these is your business, but they do have to be approved before giving them to anyone for building. Afraid to sign off the drawings? Use someone else's name! Failing that, use "Alan Smithee." That's the name Hollywood uses when the director quits the movie after realizing his work was crap to begin with.



Your drawings and design plans had better:

a) Address all the requirements from 7.3.2 above.

b) Define what kind of materials you are going to make it with, and have an idea on how you're going to make it. Plagiarizing your competitor is completely acceptable here.

c) List the inspection and test acceptance criteria, so your QC guys can have fun later telling you how much your design sucks.

d) Include details on what's needed for "safe and proper use." Aww… see? They care!

e) Include "key characteristics" and "critical items" and maybe even some "glabbable guberfitches."

7.3.4 Design & Development Reviews: Get Ready to Mock the AutoCAD® Geeks

Better review those drawings and plans before giving them out to the shop guys! You may want to laminate them first, too; don't want them coming back with shop-goo all over them.

Just in case, you'd better make sure:

a) You haven't gotten off on a tangent and designed a hotel for someone asking for a birdhouse.

b) Figure out where the designers screwed up, and fix it.

c) Design reviews are used to approve the design at every stage, so you can share the blame later.

Be sure to actually involve the designers in the design reviews and resulting physical beatings. And keep records. Of the design reviews. Not the beatings.

7.3.5 Design Verification: Does It Look Like A Duck?

By "verification," they mean comparing the drawings and plans against the original list of requirements. This is a paperwork exercise. Don't cut yourself.

Keep records of this, too.

7.3.6 Design Validation: Does It Sound Like A Duck?

By "validation" they mean comparing a physical, finished part (usually a prototype) against the original list of requirements. They intentionally selected "verification" and "validation" as words because they sound similar, and consultants will confuse them all the time. You can thank the IAQG for not using the words design vindication, design vacillation, design visitation, design vasectomization and design vaccination, all of which were on their short list.

Keep records of this, too.

7.3.6.1 Design & Development Verification & Validation Testing: Are You Sure It's a Duck?

Sometimes you may have to do some testing of the designed product to make sure your ideas on paper don't wind up killing people. Unless your product is intended to kill people. Then you need to conduct tests with live subjects.

If you have to do any testing, you must make sure you plan the testing first, document the test plan, write test procedures, determine what configuration the product should take before you submit it for test, and define the test acceptance criteria. After you are done testing, you have to make sure it actually passed the test before proceeding. Like a college exam, but with less Stoli and more disappointed scowls from your parents.

7.3.6.2 Design & Development Verification & Validation Documentation: It's a Duck, and I Can Prove It!

After all the testing and the inspection and the fiddling and the finagling, you have to keep records to prove you tested, inspected, fiddled and finagled. Make sure all your numbers are right, or we make you go back and start over.

7.3.7 Control of Design Changes: Sure, It's A Duck, but Dammit, You Were Supposed to Design a *Transmission Assembly*!

Your design stunk after all, didn't it? Change it! But make sure the revisions are reviewed, verified and validated just like the original ones. If you've already shipped product from that bad design, do two things: (1) contact the customer and tell him, and (2) contact your attorney.

Keep records of this, too. Darn, that's a lot of records! Remember, each record is a job for someone, somewhere!

7.4 Purchasing: Shopping Sprees without the Guilt

7.4.1 Purchasing Process: How to Spend the Boss' Money

Ya gotta spend money to make money, they say. That's true even if your company makes counterfeit money. At some point you're going to have to buy something. Here's how you do it.

If you do buy stuff, make sure it's what you wanted. There's nothing worse than ordering wine casks with bungholes and getting the opposite.

Ensure that your suppliers aren't complete morons. Evaluate them ahead of time. Ask them if they are AS9100 certified. If not, ask them how they escaped. Take notes. Beg them for a job. Tell them if you don't get out of this goddamned company soon, you're going on a killing spree.

Hey if you really want to have fun, meet with your suppliers face-to-face, put on a really creepy thousand-mile stare and say, in a monotone voice, "You ***will*** become one of us… or be destroyed."

When you're done terrorizing… er, ***evaluating*** your suppliers, keep records of those evaluations. This is the dreaded "approved vendor list" – or something like it.

One reminder: you are responsible for everything you buy, not your supplier. If your supplier sends you shit, it's your fault. Unless you ordered shit. Then you have an interesting receiving inspection ahead of you.

Some aerospace add-ons:

a) You must have a register of suppliers that defines not only whether they are approved, but what they approved for. Even if your supplier is "Joe's Shop of Only Batteries and Nothing Else," you need to write down that you buy batteries and nothing else from them.

b) You need to periodically re-review your suppliers. If you mandate AS9100 certification on them, then you can just review their certificate every year. See how this thing grows? It's like the last scene of *Invasion of the Body Snatchers*.

c) You have to have a plan on what you are going to do when a supplier screws up. No, you can't use Guantanamo.

d) If your customer mandates you use a certain vendor, you have to make sure any supplier you hire also uses that vendor. For example, if Raytheon tells you to use "Happy Nazi Molester Unsafe Chemical Company" to plate your parts, you'd better ensure that your suppliers or subcontractors *also* use them. I'd love to see the look on your accountant's face when *that* PO goes out.

e) You have to write a procedure on who can approve and disapprove suppliers. Seriously. Then write a procedure on how to approve *that* procedure. It's all so very *meta*.

f) You have to do risk assessments on suppliers. You can decide what suppliers to do this for, so consider it for your top suppliers or the ones whose address is a subterranean volcano lair.

7.4.2 Purchasing Information: What to Write on Purchase Orders

You know how you have to be clear on finding out what your customers want from you? Well, what goes around comes around. You've also got to be sure to tell your suppliers what ***you*** want. They can't read minds any more than your Purchasing Manager, Karnak.

That means purchase orders that actually say more than "Hey, Sal, send me three of those blue, rubber, knobby, vibratey things!"

In addition to the basic information like quantity, type, and description of what you want, your POs should include:

a) Any special approval requirements your QA team dreamed up, or other annoyances like procedures, processes and equipment. Want them to make the parts on a gold-plated press brake and ship them in delicately laced silk bags? Better tell 'em so in the PO!

b) Any weird requirements you guys thought of for the people working on your parts at the supplier. “You must speak in Esperanto while inspecting our parts” is always a good one.

c) Quality system requirements, like AS9100 certification. Put it on the PO, so they ***have*** to become certified! Resistance is futile!

d) References to technical drawings. Throw on a velvet smoking jacket and whisper, “would you like to come to my place and see my etchings?”

e) And design, test, inspection, verification and other requirements. Turtle!

f) Requirements for test specimens. *“Test specimens?”* Eww, gross.

g) A whole lotta boilerplate junk. I can’t think of a joke for it, so I will just paste it in a very, very tiny font:

Requirements regarding the need for the supplier to
- notify the organization of nonconforming product,
- obtain organization approval for nonconforming product disposition,
- notify the organization of changes in product and/or process, changes of suppliers, changes of manufacturing facility location and, where required, obtain organization approval, and
- flow down to the supply chain the applicable requirements including customer requirements,
- who are you kidding, you can’t read this, what with the syphilis and all.

h) Any record retention requirements you want to pass onto the supplier, like “keep all my records safe and please sing to them every night before you go to sleep.”

i) A mandate to allow the “right of access” to you, your customer, and the FAA. If you word this right, you can physically violate your suppliers, and it’s totally legal!

j) Most importantly, every purchase order generated by every company must include at least one line item for a Jaguar, Lotus, or Bentley, to be shipped, at your expense, to Oxebridge Quality Resources International. Hey, we didn’t make that up. It’s in the standard.

And review the POs before you send them out. A PO that goes out with bad information is ***your company’s*** fault, not the supplier’s. Yeah, they blame you for everything.

7.4.3 Verification of Purchased Product: Get What You Asked For

Once you’ve received the stuff from the supplier, you have to check it because --- let’s face it --- they’re all criminals. Each and every one of your suppliers is trying to rip you off. Even if they are ISO 9001 certified, you’d better check it. If they are AS9100 certified, check it twice.

That means inspect it at receiving, of course. If you get the notion to release the stuff before you inspect it, you better have a way to recall it after you find out that was a really stupid idea, because the product was actually ***on fire*** when you released it to the shop floor.

And if you try to dodge the whole bullet by telling the supplier to inspect it themselves, sorry pal --- no dice. You’ll have to spell that out in the PO, and even then, you’re still responsible if they send you crap. You also have to keep a record of each supplier you gave this “privilege” to. If you plan on doing the inspection at the supplier’s facility – something to consider if they are a few miles from Disney World and the wife’s been whining about how you never take her and the kids anywhere – then you need to include that in the PO, too.

7.5 The Dark Arts: Production and Service Provision

7.5.1 Defense Against the Dark Arts (Control of Production and Service Provision)

Apparently the day they worked on this clause someone at TC176 awoke from their production-focused daze and snuck “service provision” back in. How’d that guy get in here? Call security!

Basically, it’s the old “process control” clause from ISO 9001:1994 with a different name. That’s because back in ’94 they really didn’t know what the heck “process control” meant. But now they do! Release the balloons.

So, to control your work, you'd better do everything under what they call "controlled conditions." Menacing, huh? Here's what it means:

a) You must provide your people with an adequate description of what they are making. Routers, prints, work orders, permanent tattoos, etc. All that stuff.

b) You must give them work instructions where necessary. "Necessary" typically means where if you didn't have them, the parts (or service!) would suck. But if you really want to keep your job, you'll write a work instruction for every little thing. Like a work instruction on how to write work instructions.

c) You must provide suitable equipment. That means it actually works, not that it looks good in a suit.

d) You must provide your inspection and test people with the proper inspection and test equipment. Asking someone to measure a 64th of an inch with two paper clips and some bubble gum doesn't cut it.

e) You must actually conduct inspection and testing, although now they call it "measuring and monitoring" so they don't ***sound*** so inspection-fixated. Don't believe it for a minute, though!

f) You must control "the implementation of release, delivery and post-delivery activities." That sounds mystical, and it really is (saying it backwards invokes Pazuzu, and you remember what he did to Linda Blair). But all it means is that you have to control what happens to the parts during shipping and when it gets to the customer. At least as much as you can, given that the customer probably has a drunk forklift driver just like you do.

g) You must have a way to account for all parts while they are being made. This is usually done on a router or traveler, although scratching hashmarks in your arm works, too. And think how emo you'll look!

h) You must check off the production steps as they are completed. Again, the antiques at IAQG are still stuck in the mindset of a shop governed by paper travelers, and that whole "ERP" thing is beyond them. But either one works.

i) You have to have a FOD program! It's just one tiny sentence, but it commits your entire organization to a dark, dystopian future where every corner has grimy FOD buckets, and everyone is subject to deep cavity FOD inspections by grimy guys with FOD buckets on their heads, and everything is in black and white and you can never, never make your mother happy. Or at least that's what I dreamt last night.

   I am not kidding when I say that you'd better have a full blown Foreign Object Detection / Debris / Damage / Damnation program in place. They auditors are dead serious about this, even the dead ones.

   In order to instill a sense of concern in all your employees, remind them that FOD is all about detecting foreign objects, then remind them that 9-11 was caused by foreigners, and that anyone allowing FOD in the parts is a terrorist. If they think you are being a little too hyperbolic, strap a pipe bomb on them and ask them to tell you why they hate their country. If that doesn't work, just deport the traitors.

FOD inspections in the modern era.

j) You have to monitor and control your utilities – stuff like lights, water, and Mole-Men-powered underground generators.

k) You have to provide your workers with "criteria for workmanship, specified in the clearest practical way." Here's an example:

Pre-production planning should consider:

- Implementing your production processes to manage "key characteristics", "critical items" and "glabbable guberfitches."
- Tooling. This is what you get arrested for showing people at the park.
- At what point, during production, you intend to conduct inspections. Or, when not, if you live on the wild side.
- Special processes. We used to call them "handicapped processes," but that was seen as a bit insensitive.

7.5.1.1 Production Process Verification: First Articles & the Inspectors Who Love Them

This is the "First Article Inspection" clause. It requires you to do a full inspection of the first completed part you make, to ensure your production processes are actually making parts that will pass inspection.

This is different from a "First Piece Inspection," which is the inspection of the first piece you make, not the first article. Got it?

What's the difference between a "piece" and an "article"? What am I, a linguist?

Because aerospace primes are dedicated to destroying our economy by wiping out all small businesses through burdensome procedures, you also have to ***re-do*** the First Article any time you change… well, anything.

Change equipment? First Article.

Shift change? First Article.

Change your shoes? First Article.

New effeminate male receptionist who insists he's "married" but you don't see a ring, and are pretty sure his "roommate" isn't the marrying type anyway? First Article.

How can something which is repeated so often still be called "First?" What am I, a philosopher?

7.5.1.2 Control of Production Process Changes: Change is Inevitable, But So Is Stagnation

In understanding the dialectical dynamics at play in the modern production environment, one must acknowledge the epistemology encompassing the concepts of "what we know" and "what we think we know" and then extrapolate those to hierarchically validate the inevitable metamorphosis of objects in space, and our perception thereof.

Turtle.

7.5.1.3 Control Your Production Equipment, Tools, and Software Programs, Because Otherwise They Will Control Us

Your need to control your equipment. I know your parole officer told you that once, but this is different.

Any equipment you have, including the software driving it, must be validated in some way to make sure it's working properly. Companies typically do this by running parts through and then conducting a First Article, which validates the process and the equipment. NASA does this by running parts through and then just installing them on space shuttles to see if they blow up.

You also have to periodically check the storage and condition of your equipment and tooling. Make this part of internal audits, and kill two birds with one stone.

Wait a minute. You kill birds? You monster, I'm calling PETA!

7.5.1.4 Post-Delivery Support

If you provide any kind of support to your product after you ship it, this clause applies. If you do repair on product which is under warranty, this clause applies. If you "support" your "postman" after he "delivers" himself to your bedroom, this clause applies.

In such cases, you have to:

a) Collect service data, like how the product is working, and what goes wrong

b) Figure out what to do when the data goes wacky, or when the customer throws the returned product through the boss' window, with a note attached that reads "Thanks, jerk, I lost my job because of your crap quality!"

c) Maintain service documents, like how to fix that window

d) Develop "repair schemes," which is as shady as it sounds

e) Control any field work you do. Just because you are in a field doesn't mean you can forget your AS9100 QMS. You can enjoy the birds, though. Aren't they lovely? It's such a pretty field.

7.5.2 Validation of Processes: How to Control That Which Cannot Be Controlled

Remember the "special processes" of ISO 9001:1994? They're still here, confusing the heck out of everyone, like an old uncle who's starting to smell toast all the time.

Let me try to put this into some kind of language everyone can understand. A "special process" is a process that results in something you can't really measure or test unless (1) you have to send it to the customer for them to install and use, at which point it's too late because you've already shipped it, or (2) you must blow it up to test it.

So basically, it's something you just can't check before sending it out. That means the old inspection and test method doesn't work, so instead they're asking you to go extra heavy on ***controlling*** the process, so you stand at least half a chance in getting a good part out of it.

Or maybe one quarter chance.

In order to validate your special processes, you have to:

a) Figure out how to review and approve the process in question. Writing it down is a good start. If you're nervous, look around and see who's absent today, and sign ***their*** name to it.

b) Approve the equipment and personnel. Again, blame the absent guy. There's nothing that instills more confidence than writing down some phony approvals on a piece of paper!

c) Figure out how exactly you're going to conduct the process steps, usually by writing down instructions that cannot be disobeyed. Get out the whip.

d) Figure out what kind of records you need, so that auditors can nod approvingly at you some day.

e) Figure out how you can periodically revalidate the process, because going through this just once is not nearly enough fun.

Still confused about special processes? Join the club. Understanding special processes is a special process in itself!

7.5.3 Identification and Traceability: Just Number Everything

Yes, even in the 21st century you still have to make sure your parts and raw materials have tiny numbers inscribed delicately on them. Hire one of those guys who can write a whole Bible on a grain of rice.

Not only do you have to identify every piece of everything lying around that mess of a shop with a part number, you also have to identify it as to whether it's good, bad or just plain ugly. And if you have parts that are subject to configuration management (remember? big parts, medium parts and small parts?), then you have to identify them according to that, too.

And heaven help you if the customer requires you to put serial numbers on parts or to have some other "traceability" methods in place. Then you'd better come up with some way to do it, and be able to know exactly when part 12589399298-23477324-4883-G shipped.

Finally, if you use any kind of acceptance stamps, they need to be controlled so we know exactly who used it. This is done by assigning only one numbered stamp to each inspector, keeping a log of who got what stamp, and then stamping on the log. Or something like that. Most of my clients are still signing off their inspection records with signet rings and molten wax.

7.5.4 Thou Shalt Not Covet Your Customer's Property

Sometimes, the customer will come visit the plant. A few times, he may even leave his wallet in the lunch room. Feel free to keep it, because that's not what this clause is talking about.

Instead, they're talking about customer supplied material or customer supplied equipment. If you've got this kind of stuff in use, and assuming it's not because you stole it in the dark of night, then you have to control it as if it were a baby. Keep it warm, protected and safe. Nurse it on your breast. And if you break the baby … er, I mean the customer property, you have to tell the customer. Wow, that metaphor got out of hand fast.

You also have to identify it as customer property so that no one accidentally uses it for the wrong customer. Is AS9100 overstating the obvious? Sure! They stick to their strengths.

This also applies to customer-provided "intellectual property," but since none of your customers are particularly intellectual, don't worry about it.

7.5.5 Preservation of Product, and Your Career

They used to call this clause “Handling, Storage, Preservation, Packaging and Delivery” but that was a mouthful, and since the TC 176 guys already had a mouthful of donuts and bad hotel coffee, it proved to be too difficult. Instead of listing the types of preservation and giving specific examples, the guy who came up with this clause got lazy and reduced it to a single sentence: “Preservation shall include identification, handling, packaging, storage and protection.”

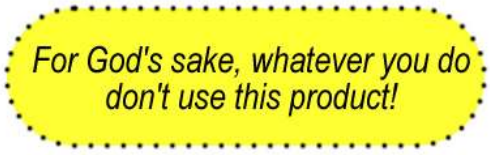
Frustrated with yet another attempt by ISO to make things simple, the IAQG went in and re-complicated it. They made sure you understand that this applies to:

a) How you clean your product. I call this the “manscaping” requirement.

b) How you control FOD, the “other F-word.”

c) How you handle sensitive products, because some products are more sensitive than others, probably due to poor parenting.

d) When you need to apply special labels for safety warnings on product, like this one:



e) How you rotate expired chemicals and raw materials that are way past their shelf life. If you donate this stuff to local children’s charities, you may not want to write this into a procedure.

f) How you handle hazardous materials. Use the children from that local charity.

“Foreign objects” are only mentioned in passing in AS9100, but it’s a big deal, so I should spend a little more time on it. The reality is that stray foreign objects can wind up in all kinds of life-threatening places, like spinning engines, transmission lines, under toe brakes, or deeply embedded in places that will be really embarrassing if you ever end up in the E.R. to have a nurse yank it out. So you really have to pay attention to the risks of FOD, and try to prevent it.

Now the truth is that you can have all the FOD programs you want in place, but auditors will never notice unless you have FOD posters. So, seeing as how cheap human life is these days, it doesn’t really pay to have FOD programs in place. Just skip to the endgame, and buy some posters. I’ve provided an example that gets attention, on the next page.

FOD

If you wouldn't want it in your soup, it probably doesn't belong in an aerospace part.

7.6 Control of Monitoring and Measuring Equipment, or "Putting Sticky Labels on Anything with Numbers on Them"

Don't let the name fool you; the only "control" discussed in this clause is calibration. It could have been a much shorter section, but when the ISO guys were writing the original version, they thought they were getting paid by the word.

If you're going to take the IAQG's advice and ignore Deming, you're going to need lots and lots of equipment to do all those redundant in-process and final inspections. That means lots of calibration, too. Another boon for the local economy. I am pretty sure this entire thing is a conspiracy started by the sticky-label companies to boost sales.

Now, I know you're anxious to get started, but before starting any inspections and tests, you need to be sure you actually can ***do*** the inspections and tests. This means that you've checked to make sure you have the right equipment and that the boorish, giant-thumbed goons in QC can actually work the darn things.

Once you're really sure you have everything you need, then you can start the fun they call "control of monitoring and measuring equipment!"

You'll want to create a log of the equipment, and list the calibration due dates, serial numbers, all that stuff. Well you don't really ***want*** to, but you have to.

You must also:

a) Calibrate your equipment at intervals you define, and those intervals had better make sense. None of this "calibrate once every time Halley's Comet passes." The interval must be based on common sense, or (since that is what you lack) previous calibration results. The standards have to be traced back to some certified standard, so in the U.S., that usually means NIST. NIST stands for "National Institute of Stuff you Trace back to." Easy.

   If you can't calibrate the equipment --- meaning it can't be calibrated because the equipment doesn't allow it, not because you're an inept clod with all the coordination of a drunk in an earthquake --- then you have to figure out some other way to "verify" the device. Usually, that means comparing against a "known good" part. You probably don't have any known good parts lying around, so borrow one from a competitor. Either way, write down your homegrown verification method. It makes it easier for the Consumer Affairs people later on.

b) You also have to adjust, re-adjust and re-re-adjust the tools as needed. This is a nice way of saying, "Go ahead and fiddle with it!" Remember the old axiom "If it ain't broke, don't fix it?" Well, no one on the standards board ever heard of it, so they give you full permission to tinker with your expensive tools.

c) Those tools had better have a sticker on 'em, too. That's because ISO has a deal with the sticky label industry. But it's also good to label the equipment so your operators know if you've calibrated something or not. Presumably it's so they can report the tool if it's either missing a sticker or if the date is overdue; but usually this just means it gives something for the ISO auditor to look at in order to show his competence. Watch as he strokes his chin thoughtfully as he looks at the labels! What a pro!

d) Once you're done fiddling with all the little dials, knobs, and screw adjustments, make sure no one else horns in on your fun and cover them over with more sticky labels. You have to make sure no one else can come in and re-re-re-adjust your re-re-adjustments. Turtle.

e) The tools also have to be protected from damage or deterioration. Did they come in a nifty wood box? Store 'em in there. Did they come in a plastic case? Use that. Did they come in an air mail package with no return address and there's a strange ticking sound coming from inside? DUCK!

Oh, and because (despite all your best efforts) you'll probably find a tool that craps out at some point or another, you need to go back and do what they call a "Holy Moley!" report. This is where you go back and do a study on how many parts were shipped after some dolt used that broken tool despite your best efforts. Trust me, when you see how many product recalls you'll have to send to the customers telling them all your measurements for the past year have been off, you'll be shouting "Holy Moley!" more than Billy Batson.

Of course, keep lots of records of calibration, too. If you're relying on the records from your third-party calibration house, you'd better go over them with a fine tooth comb. They are used to screwing up little things like your tool's serial number, its previous calibration state, and the signature of the guy who calibrated it. Come to think of it, that latter point is probably intentional.

If you want to go high-tech and use software to monitor and measure stuff, you're not out of the woods. You have to come up with some means of determining if the software really works in accepting good stuff and rejecting bad stuff. You may have to check this periodically, too, because they all know how software likes to "go bad" over time. Snort.

Also, monitor the environment where you do calibration. If you are calibrating a plastic ruler while standing in an oven that exceeds the melting point of the plastic, ***get the hell out!! Why are you standing in an oven???***

8. Measurement, Analysis & (*HAH!*) Improvement

8.1 Don't Forget to Take the Lens Cap Off

The US Army calls a "Section Eight" the discharge they give you if you are crazy. I know that because a few of the guys on TC 176 told me from personal experience. I will let you muse over the irony of giving that very same number to the "inspection and test" clause as I proceed.

Actually, since ISO 9001:2000 this part is more than just inspecting and testing. Now it is also about actually ***doing*** something with the data you get. It took them 13 years to figure out that previous versions never required anyone to ***read*** the data they were demanding you get! Continual improvement, or negligence at the start? You decide.

Anyway, you now have to monitor, measure, analyze and improve the processes you've identified in order to:

a) Demonstrate your product actually meets the customer's and other requirements, and not just the requirements of your alcoholic Sales Manager.

b) Show your quality system really does conform to everybody else's requirements.

c) Continually improve your quality system, because you hired a really lame $1,300-an-hour consultant, and your QMS will need all the improvement it can get.

This includes figuring out what kind of "statistical techniques" you will use and how you will use them. They added this part because for every ASQ "Six Sigma" book sold as a result of this mention, they get 5% of the profits. All that cash gets sent to the TC 176 Swiss bank account.

That, my friends, is why ISO is in Geneva.

8.2 Monitoring and Measurement: The Fastest Path to Feeling Inadequate

8.2.1 Customer Satisfaction: Ribbed for Her/His Pleasure

You know it, I know it, and they know it. Customers are never satisfied. They are greedy, selfish goats only interested in ripping you off. But put on a brave face and pretend to care. Pretend you're a candidate running for political office, and you'll have the act down pat.

You have to keep an eye on how the customer ***perceives*** your organization. That means you can't just measure rejected parts or complaints. You actually have to ***ask them*** what they think, and put on a big act that your boss really cares about what they have to say.

Sure, that ***may*** mean customer surveys. But good luck getting those illiterate dummies to fill them out, though.

Instead, you may have to get tricky and do phone interviews or something. Include a customer satisfaction survey with a $50 bill and a box of Godivas. Do whatever it takes. But keep the data and use it to figure out if your customers are actually happy with you, or ready to key your car next time they get the chance.

Because the prime OEMs are obsessed with getting stuff on time (second only to getting it cheap), they added a hard requirement that you measure "on time delivery" as one of your satisfaction measurements. In fact, they're so obsessed about it, you could say they're a little "OCD" about "OTD."

If this was a standup routine, that joke would have been met with the sound of crickets.

"On time delivery" as perceived by the typical aerospace customer.

8.2.2 Infernal Auditing

The fun of auditing should not be given exclusively to those who have been fired from previous employers for gross incompetence, and then re-hired as RABQSA-certified registrar assessors. No, you too should share in the magic that is auditing.

That means you have to conduct ***internal*** audits. This does not mean a self-directed full cavity search, but an audit of your company's quality system.

Internal audits must be scheduled, and that doesn't mean the same day every year. You need to schedule them in accordance with how important the audited activity (process!) is, as well as previous audit results, etc. The standard doesn't say this, but all the registrars out there expect you to audit your entire system at least once a year. Yes, registrars make up their own requirements, I know. Let them have their fun, because their personal lives are crap.

Your audits must:

a) Confirm that your quality system conforms to all the requirements of your internal procedures, customer requirements, and all other requirements. This last part is a blanket requirement intended to sell other ISO and SAE standards, and you'll never fully comply with it, so don't bother. Call in sick that day.

b) Confirm that your quality system continues to be "effectively implemented and maintained." This one is a good idea because most companies forget about their ISO program about thirty seconds after getting their certificate. As far as what "effectively implemented and maintained" means, it means what it says it means, and it says what it means, it means. I mean, it says and means the same thing. I am saying that it means what it says, meaning that saying it and meaning it are like saying and meaning. Turtle.

Your audits must include the audit criteria, scope, frequency and methods. That means defining what you intend to audit, what you ***don't*** intend to audit, how frequently you intend to audit, how frequently you ***don't*** intend to audit, how you plan on auditing and how you ***don't*** plan on auditing. Ouch, my head hurts all of a sudden.

Auditors must be impartial, objective. That means you can't audit your own work. That means you must hire expensive third party consultant companies to do your internal auditing. You might want to hire an auditor from the same registrar that gave you your certificate, but pay him under the table. It's legal, but still shady enough to make you feel like a "bad boy." Chicks dig that.

NOTE If you are female, you are out of luck. This is why you never see female Quality Managers. That, and females are generally smarter than men, and know better than to throw their lives away on a shit career.

Or you can just hire a guy named "Perry" and get your internal and external audits done all at once. I think he throws in a free Sears® glamour studio photo session.

NOTE The 25% of readers who get that joke just sharted, trust me.

Have an audit finding? Write it up! This is the most power you will ever have, so feel free to abuse it. Then make sure your management gets a copy and that they actually fix it in a timely manner. What "timely" means is up to you. Measure your responses in dog years, for all I care.

Then, someone darn well better go behind those managers and verify that they actually fixed what they said they fixed. Managers didn't get promoted by actually doing anything, after all, so you will have to keep on them. Threaten to tell their wives about their girlfriends (or vice-versa) if they don't ***really*** fix the problem. If your boss is a married woman, then seduce her first, become her lover, and then threaten to tell her husband about yourself. If you are a woman, and your boss is a lesbian, then… I … umm… you know, *screw it.* Keeping these jokes gender-neutral is killing me. Almost everyone reading this is a man, anyway, since aerospace doesn't have the most progressive record on women, so I'm probably safe.[1]

8.2.3 Monitoring and Measurement of Processes

It's not enough to make you inspect and measure product alone, now you have to inspect and measure the intangible concept of a "process."

Remember, a process is anything that converts inputs into outputs. For a great technical video on this subject, do a quick YouTube search for "Doctor Heiter." Be sure you have your entire staff watch with you, including your boss. E-mail me on how that pans out.

Yes, now you have to figure out how to measure and monitor each of the processes you identified in 4.1 so you know when they are running on all cylinders, or when you need to strap on a cylinder of O_2. Furthermore, your M&M methods should provide evidence of your processes being able to do what they intend to. In English, that means that if your process is intended to "inspect parts," that you actually have data that shows you can find a bad part when one inevitably gets through the system. In your case, maybe you should just measure the ***good*** parts. It will be less work.

And if a process doesn't work, you'd better take some kind of corrective action to fix it and to make sure the product is still ok.

Under AS9101D – the registrar rules for AS9100 – auditors are granted newfound powers to "judge effectiveness" of your processes. This was an ability bestowed upon them when they discovered the mystical hammer *Mjolnir* and were transformed into *Kronans*, an ancient word meaning "Those Suddenly Qualified Despite Lack of Experience."

One of the means by which these Superauditors determine if your process is effective or not is heat vision. The other is by seeing if you have set measurable objectives for each of your processes, including goals. If a process has not met a goal, you must (a) change the goal, or (b) take corrective action to show you are improving your process to meet the goal. If you don't do either, Superauditors have another ability they can use to tear you a new blowhole, and it's so horrifying I don't dare explain it. Trust me, just measure each of your processes.

This city was destroyed when an aerospace auditor discovered the company did not meet its process objectives.

8.2.4 Monitoring and Measurement of Product

If you thought we got away from an obsession with inspecting parts after the late 1950's with MIL-Q-9858, you're wrong. They just call it "measuring and monitoring" so you think we are making progress.

You still have to inspect and test your product, but how you do it is up to you, and you get to decide when: in-between manufacturing steps, prior to packaging, during smoke breaks, or after the weekly mass-layoffs.

[1] http://www.komonews.com/news/archive/4169196.html

You must keep records of the results, too, so everyone in the world can audit them. That record had better have the name of the guy who signed off on the parts, too, so they have someone to blindfold and shoot in the chest when the satellite crashes to earth and lands on that blind puppy orphanage.

AS9100 added some additional requirements:

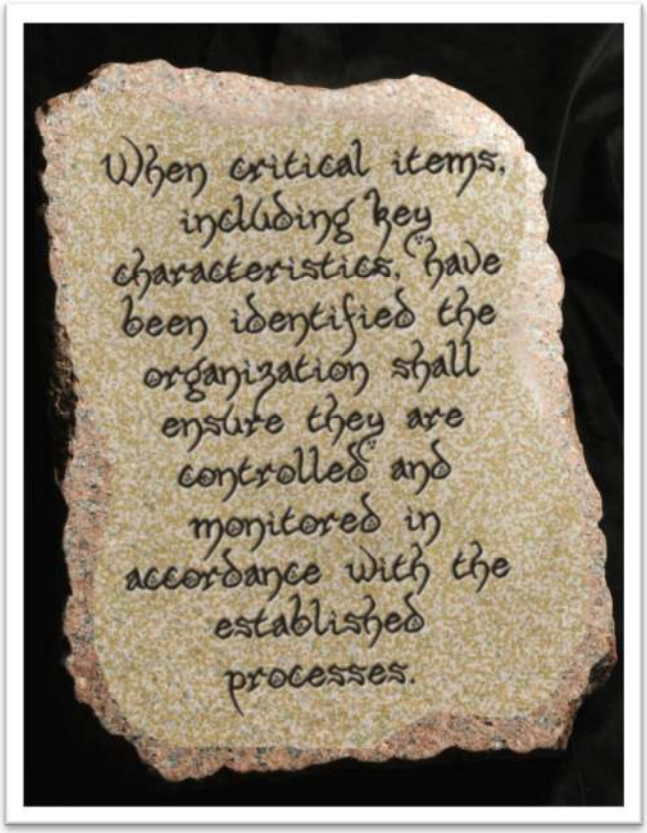
a) You have to define the "requirements for product acceptance," meaning what constitutes "good" vs. "bad" product, so your inspectors actually know what they are looking for.

b) You have to define (again) when inspections or tests are required.

c) You have to keep records of the actual results. If the result was "gave source inspector $50 to shut his pie hole," then you might not want to keep a record of that.

d) You have to define what inspection equipment to use, and provide instructions if it's really, really complicated. Remember what happened to Lucille Ball at the chocolate factory.[2]

There's one sentence in AS9100 that is very mysterious, so I will add a photo of the very first known occurrence of it. We have to let historians and archeologists decipher it, because it is beyond the abilities of simple aerospace engineers to do so:



I hope someday a wise man can decrypt the ancient code with which this was written, so that the mysteries behind this cryptic message can be unlocked, perhaps to the benefit of all mankind.

Next, if you use any statistical sampling techniques … ***stop***. Sampling is just another way to kill American jobs. Inspect everything 100%, and stop killing our economy. If you do refuse on being a capitalist bastard, and insist in reducing inspection to manageable levels by using sampling, the technique must be based on sound statistical principles. For more on sound statistical principles, contact the Broward County Supervisor of Elections in Florida.

If the Production Manager is demanding you "get the goddamned product out the door, and stop holding up my shipments," then you can release the product and inspect a sample of it later. Just make sure you have a way to recall

[2] I saw it in reruns! I'm not *that* old. Jeesh.

the product if you find out it was bad all along. That can mean a letter to customers, product recall, or hari-kiri. Whatever works for your personal temperament.

You can skip this if you can sucker the customer into signing a waiver or something. Good luck with that, because the only thing a Bombardier executive signs is a dividend check, a pink slip, or a girl's boob at a book signing.

Finally, you must also verify that all the necessary paperwork – airworthiness certs, certificates of conformity, handwritten messages pleading for someone to "call the police, please!" – is completed and slathered on the side of the box before it all ships.

8.3 Control of Nonconforming Crap

Irony: this whole standard is one big nonconforming product. I mean, if this standard worked, we wouldn't need an entire section on what to do when it doesn't, right? The authors lacked all confidence. Or maybe they are setting it up for a sequel.

When you ***do*** find a bad part, you'd better make sure you don't ship it. To control it, you have to have one of those famous six documented procedures, too.

Here's how you can handle nonconforming product:

a) Fix it. If you find out the nonconformity was operator error, eliminate the operator. If you're not located near a deep, secluded lake, you might want to keep a big dumpster handy for this activity.

b) Or, you can get the customer to sign off that he will take your bad parts anyway. This is always preferable, because getting a signature is easier than fixing a part. Of course, pleading for signatures every few hours will drive the customer to take his business elsewhere, but that's not your problem, is it?

c) Or, you can re-grade the bad part for another use that makes it look not-so-bad. Like hang it on the wall with a sign that says, "This is what one of your screw-ups looks like." That's called a "training aid." It's also called insulting your workers, and will probably result in getting your tires slashed.

d) Or, you can issue a recall, if the product already shipped. Recalls are fun, because overnight you become an international celebrity, and Anderson Cooper starts camping outside your house, waiting for an interview. Aerospace rules also require you to conduct "timely" reporting of bad product to the appropriate authorities, like FAA, NASA and Anderson Cooper.

e) And, you should make sure you do something to ensure that the nonconforming product didn't cause other product to get all nonconforming-y. You know those nonconforming parts, they love to talk to each other and start trouble.

AS9100 also requires that you have a procedure on how you came to the stunning conclusion to authorize certain people to make the decisions above.

Under aerospace rules, you can't decide to do nothing ("use as is") or do something ("repair") without getting customer approval. The prime OEM's love getting all up in your bidniz.

If you decided to hide the problem entirely, and just scrap the parts, you need to either lock them up before the scrap guy comes, or physically mutilate them so sneaky Chinese or even sneakier French don't sift through your garbage, steal them and sell them on eBay as conforming parts. Why is this a problem? Because, as we all know, the buyers at Boeing and Honeywell can't resist buying uncertified, suspicious parts on eBay, so they are going to make you control it on your end.

So take those bad parts, get a sledgehammer and have fun. It's good therapy, and if your aim is true, you can simultaneously deform your scrap, and permanently resolve that debt you owe Lenny from Receiving, back when you lost the Super Bowl pool.

If you have the stones to fix your mistakes, good for you… you're one step ahead of the airline industry. But you will have to re-inspect or re-verify those fixes, just to make sure you didn't actually make it worse, which is always a serious probability.

8.4 Analysis of Data, or "Ooh, Look! Colorful Pie Charts!"

You've been forced to gather a lot of data during the course of this AS9100 implementation. Unlike what they do with data at ISO (ignore it entirely) or at IAQG (say everything got lost when OASIS crashed), the standard requires you to actually "analyze" data. What does this mean? I'm not sure, because I'm a bigshot aerospace consultant and must have somebody else in my company doing that for me, but here's what I've heard other people say:

It means you have to review the data for possible improvement opportunities. In other words, does the data tell you where you suck? Good, now figure out how to suck less.

Specifically, you must review data related to:

a) Customer satisfaction, and lack thereof

b) Product conformity, and lack thereof

c) Process trend data, to show your control over processes, or lack thereof

d) Supplier performance, or what they call "professional malpractice"

Remember, the relationship between your inability to communicate effectively and the importance of colored charts is well documented. Auditors never actually look at the ***content*** of data charts, they only look at how shiny the graphics are.[3]

Just remember, under AS9100 Revision C, you have to have very solid data on process objectives, including on-time delivery and product quality. That means those charts should be 25% larger than the others, with extra colors.

8.5 Improvement: The Undiscovered Country

8.5.1 Continual Improvement, or "When You're the Worst In Your Industry, You Can Only Improve."

Because a broken record hardly begins to describe what they've been doing here, let's repeat ourselves at the expense of redundancy --- and repetitiveness, as well.

You have to continually improve your management system through iron-fisted tyranny (the Quality Policy), management by unrealistic targets (objectives), self-preservation of the QC department (internal auditing), extreme mental gymnastics (analysis of data), effective use of your Company Gripe System (corrective or preventive action) and an occasional meeting where the President shows off his new tie tack (management review.)

Aerospacers, you also have to pursue continual improvement initiatives and evaluate yourself on their progress. For great ideas on how to gather feedback for continual improvement initiatives, go read the IAQG procedures, and do the exact opposite.

8.5.2 Corrective Action: The Suggestion Box Gone Amok

Every company has a suggestion box filled with a great wealth of free suggestions submitted by earnest, dedicated employees. This box is usually positioned right over the shredder or an open flame.

Well, the friendly gang at ISO Technical Committee 176 decided that the suggestion box needed a greater role in the quality management system. How did they come up with that idea? One of them got hungry and broke into the TC176 suggestion box by accident, thinking it was a candy machine. You wouldn't believe the stuff they found in there! Fifteen years' worth of submissions! Suggestions from big companies like IBM and Siemens! Suggestions from other TC176'ers who were long since gone! Suggestions from MIL-Q-9858 users, from ASQ members and industry professionals! Why, the information on all those little tickets was invaluable!

[3] I kinda wish I ***was*** joking about that one.

A few days later, they lost power in the meeting room and had to burn most of the suggestions just to stay warm. The rest were eaten in order to stave off cannibalism. Alas, while the suggestions were many, they still needed to gnaw off old Chuck Wallaby's legs. Hey the electric must have been out for at least three whole hours, those donuts weren't getting any fresher, and Chuck's legs weren't going to eat *themselves*.

The one suggestion they ***did*** keep, though, was the one that said, "Make a suggestion box program part of the QMS standard." Thus, this.

As a result, you have to try to find your internal problems and eliminate the causes of those problems. Of course. your responses need to be (as they say) "appropriate to the effects of the nonconformities encountered." Meaning that tarring-and-feathering the CEO probably isn't the solution you should employ, even though it would likely solve all your problems in one fell swoop.

By the way, you'll need a documented procedure for your corrective action program. In it, you must:

a) Tell how you plan on reviewing nonconformities when you do find them, including all those customer complaints you've made a career out of ignoring.

b) Figure out the "root cause" of each problem. Registrars love to tell you to use the "Five Why" method, which theorizes if you ask "why did this happen?" five times, you will get to the root cause. The problem is, usually the root cause is that it's all your mother's fault for telling the neighborhood kids you were a bed wetter.

c) Next, figure out how to prevent it from happening again. Time to confront mom.

d) Actually carry out the action you came up with, fix the root cause, and for heaven's sake, stop wetting the bed already.

e) Keep records. This way the auditor can review these later, pat you on the head and say, "You see, son, you're a big boy now! I'm so proud of you. Maybe next year we can get you out of those adult diapers."

f) Review the action taken afterward, to make sure it actually worked to fix the problem. Otherwise you're going to have to buy a new mattress every few months.

g) If the source of the problem isn't your mom, but your supplier, then flow down the corrective action requirements to them. I know I've been using a bed wetting metaphor up to this point, but please don't urinate on your supplier.

h) Your procedure should define what you are going to do when people totally blow off their assigned corrective actions. Consider what they call an "escalation policy." This is where you notify their boss, after a specific time period. If they still ignore it, throw them down the escalator.

i) If the problem is product related, you need to find out if any additional nonconforming product exists based on your analysis (not "urinalysis," I told you, we've moved on from the pee jokes!) and fix that too. It's like *Lord of the Rings*, it just ***never friggin' ends***.

8.5.3 Preventive Action: The Lost Art of Divination

Fixing existing problems is hardly depressing enough, so they decided that your management has to try to fix problems that haven't even happened yet. You know what this means… tarot cards.

Failing that, you need to have a documented procedure on how you plan to:

a) Figure out what's going to go wrong before it does.

b) Figure out if your divination requires action, or if it's just daydreaming brought on by that ever-diminishing bottle of Cutty Sark in your drawer.

c) Figure out what to do to fix the problem that hasn't happened yet. And sweet mother of God, stop drinking Cutty Sark. The stuff tastes like octopus ass.

d) Keep records, as usual. Those auditors are voyeurs, when you think about it.

e) Review the actions taken to make sure they were effective in resolving the problem that didn't exist, but now will never exist because your imaginary plan fixed the imaginary problem.

Aerospacers, the AS9100 folks would really like it if you employed a FEMA tool to do your preventive actions. I disagree. If they do anything like what they did following Hurricane Katrina, your company will be left a swamped, abandoned, rat-infested hellhole.

CONGRATULATIONS

You made it.

You completed reading the entire AS9100 standard, something that most people who buy the ***real*** AS9100 standard can't claim. Hopefully, you learned something in the process.

Crap. I used the word "process." Now some auditor is going to ask for my objectives.

SERIOUSLY, FOR A MOMENT - ABOUT OXEBRIDGE QUALITY RESOURCES

Since 1999, Oxebridge Quality Resources has been implementing radically different AS9100 quality systems, as well as systems to comply with ISO 9001, ISO 17025, ISO 13485, CE Marking and more.

A company built by people with practical implementation experience, Oxebridge eschews traditional consulting run by academics. Instead, all implementations are performed by people with practical experience using the standards, and implementation programs are built on a core philosophy that emphasizes Quality, Usefulness, Value and Ethics. Each and every program they implement must meet those four requirements.

Oxebridge is also the only company offering proven "Rapid AS9100 Implementation." Despite the astounding implementation timeline --- putting AS9100 in place in less than 40 days --- Oxebridge AS9100 clients have an unprecedented 100% success rate with the registrars of their choice. Furthermore, each implementation project emphasizes the client's view point and eliminates unnecessary meetings, steering committees, day-long training sessions and anything that shuts the company's operations down or takes its employees away from their normal work.

We invite readers to learn more about Oxebridge and its very different approach to implementing ISO 9001 and AS9100 from the user's perspective, by visiting **www.oxebridge.com**.

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