

MSFC ISO PRE-ASSESSMENT AUDIT SCRIBE NOTES - Oct 97'

THIS AUDITOR'S MAIN FOCUS WAS ON ISO ELEMENTS: *

- 1 - MANAGEMENT RESPONSIBILITY**
- 4 - DESIGN CONTROL**
- 16 - CONTROL OF QUALITY RECORDS**
- 18 - TRAINING**

*** Other generic issues were discussed as appropriate during the audit, (i.e., Quality Policy, Management Representative, etc.)**

Date: October 22, 1997 - A.M.

Auditor: Auditor #1 (N)

????? - sanitized , replaced an individual's name

Audit Subject: Fastrac Engine
Auditee Location: Bldg. 4666
Auditees: A1- EP01 Lead Engineer
A2- EP13 (PDT Lead Engineer)
A3- EL33 (co-located support engineer)
G- EP01 liaison person

A2 provided N a hardcopy of the project plan for Fastrac and accessed the online version on his computer.

N - Is the project past CDR and ready for FRR?

A2 - Not ready for FRR, flight scheduled for 1999. A delta CDR is scheduled next.

N - What plan is used?

A2 - The approved plan, currently in between the draft plan (hardcopy) and the new plan.

N - What is the estimated time for the approved plan?

A2 - Lead engineer knows, A2 could not say when.

N - Do you have a copy of the CDR plan?

A2 - No, Lead engineer has the copy, web page should have a copy of the input.

N - Where are official records for the PDR, CDR, etc.?

A2 - Lead engineer knows where they are. Quality Records are stored in the Quality Record office in another building. ????? / QA has been involved.

N - He requested A2 access the Design Binder web address.

A2 - He accessed the list of documents.

N - He requested Section 5 of the Quality Plan be accessed.

A2 - He was unable to access this Quality Plan.

A1 arrived and participated in the audit.

N - Describe the Project Plan.

A1 - A1 described the process he utilizes for release, approval, changes. The Project Office (????? / XX01) has overall control of the project. No official, approved versions of the project plan are out yet.

Quality plan is not on a web page since it has not been approved. He requested A2 to provide N with a current hardcopy version of the Q plan.

N - Discussed approach => Project plan should have procedures.

A1 - Discussed the evolution of the Fastrac project

N -

E - New projects are to have project plans.

N - An implementation plan should be in place to describe the transition from an old (pre-ISO) project to a new project.

G - Project documentation should be modified to support ISO-9000, He showed a list of In-Scope projects.

N - Desires a project plan.

A1 - Fastrac is In-Scope and they are working to develop the proper documentation.

N - (Referring to plan block diagram) "Books" are being developed.

N - Where are PDR, CDR Quality Records?

A1 - Records are collected on web or by e-mail if possible.
Contractor maintains the database and it is available on EP intranet.

N - How are signatures controlled?

A1 - A1 described RID signature control (he has access on his computer).

N - Requested to see some CDR RID's.

A1 - Personnel use the intranet to access RID's and study them.

N - Who handles configuration control, CCB leader?

A1 - PDT being used, level 5 team for baseline product, level 4 team allows product to go forward. Level 3 (A1's level) - A1 approves. Level 2 (Bachtel's level) approves items with customer input.

E - Co-located personnel working this effort?

A1 - Yes

N - CDR this year?

A1 - Yes in 4/97, but there still are open issues that resulted from that review.

N - Issues to be shown in next iteration of the project plan?

A1 - Schedule will be modified at the delta CDR.

N - Schedule available through the plan?

N - Requested a closed CDR RID be accessed and displayed online.

A2 - A2 accessed and displayed a closed RID.

N - N said the system was good.

A1 - A1 described systems for tracking project development (documentation control).

N - Will all RID's be closed before flight?

A1 - Yes, absolutely!

N - What about PDR RID's?

A1 - They are not on his website.

N - N expects milestone reviews, showing approvals to move to the next stage of the effort.
A1 - A1 gave an example of conducting the TRR, he plans to put explicit wording into his documentation concerning milestone reviews.

N - N described how the life cycle of a task should include approvals to continue after each milestone review. Consistency is most important for handling each task.

A1 had to leave at this point.

A2 - Demonstrated deviation and waiver control over their web site (IP address, multi-user). He discussed the configuration management plan maintained by EL.

N - What level is the CM plan?

A2 - A2 described the levels and personnel involved.

N - Do all the projects use this plan?

A2 - Similar, working level not formalized.

N - Mentioned that MSP-P04.2 is the reference for Configuration Management.

A2 - A2 pulled up the baseline MSP on his computer.

N - Why are the 5 levels of your Fastrac plan not described in the MSP-P04.2?

E - Other projects work on different levels.

N - N has problems where the MSP defines CCB versus this Fastrac program.

A2 - A2 read portions of CCB control and signature authority matrix from the MSP.

N - Where is the CCB plan for each level?

A2 - A2 asked A3 to print out the sections of the document describing different level CCB staffing. Printed document is not on the web (A2 reported it will be on the web after final approvals are completed).

N - Encouraged that the description for CCB configuration be in place and available from the website. (Document only shows levels 4 and 5).

N - Correlation between the Fastrac plan and the MSFC MSP's is difficult to see.

A3 joined the discussion.

N - What levels does the Fastrac project plan effect?

A3 - Levels 4 and 5 (2 levels).

N - Who does level 2 and above?

A3 - ????? in EL (Shuttle Support).

E - (Called ????? to see if the plan was available) ????? reported that ????? has the level 2 plan. ????? office was contacted to obtain the web site address for the master list.

N - Is there an overall plan that describes the levels and the linkage between them?

A3 -

N - Do you keep notes or minutes at the CCB meetings?

A3 - No

N - Do you keep a record of action items?

A3 - Not in a formal minutes form.

N - How do you record the actions items, events, etc. of the meeting?

A3 - Concurrence sheets, records, etc.

N - Is an agenda kept? Record of items under discussion.

A2 - An agenda is kept. A2 showed a signed deviation / waiver for the project. Changes can be submitted electronically.

N - Requested to see a blank deviation / waiver form.

A2 - A blank form was provided.

N - Is this submitted to document control?

A2 - No, since it is level 5 controlled.

N - N recommended ...

N - Requested a copy of the last agenda for the configuration control plan.

A3 - Provided a copy of the agenda, described the status of the items on the agenda.

N - Who attends the meeting?

A2 - PDT members, personnel on the project plan list.

N - Reviewed the disciplines, requested to see the charter memo.

A2 - Supplied memo, list of CCB personnel, and reported that attendance by all members of the CCB is not mandatory.

N - Who is required to attend?

A2 - A2 did not have a list of mandatory attendees but reported that he attends most meetings. Attendance is not usually recorded but the concurrence sheets for the changes tell who approved the change.

N - N recommended more direct connection between the charter memo and the agenda.

N - Where do approved (Level 5) changes go next?

A3 - Changes go to different places at MSFC, appropriate procedures are utilized depending on where the item goes. Get interaction / feedback from the higher level.

N - Change orders effect requirements?

A2 - Requirements do not change.

N - Do the above descriptions work the same for Level 4 operations?

A3 - A3 provided a description for the Level 4 CCB and reported the CCB meets when requested.

N - Do you have access to the Level 4 plan (Design input, current version)?

A2 - A2 indicated access to the spec. on the web, repository, and he had a hardcopy for review. The repository has the current version of the document. The online document is not current.
(A2 reported that he relies on A3 to supply him with the latest versions of the project documentation)

N - There is uncertainty over who has, how to get, and where current versions of documents can be obtained for this project.

A2 - Called the repository to test obtaining currency data on the Fastrac documentation. The repository was able to confirm the revision they have is current.

N - Described how configuration management plans should be configured to indicate linkage between different levels.
(put CM# and Rev level on problem / change form)

N - Online and notebook data was good.

Date: October 22, 1997 - P.M.

Auditor: Auditor #1 (B)

Auditee (A)

?????: sanitized, replaced an individual's name

Image Project

(B): Do you have a project plan?

(A): yes

(B): Please show it to me?

(A): (Finds it on the computer.) It is broken out into all 20 elements.

(B): Do you have a schedule?

(A): Schedule is handled by ??????. We only design and build the door to a camera. The direction to do the job this way is based on this memo. (Memo signed by ??????)

(B): (Looking at Configuration Management (CM) section.)

(A): The CM section has been tailored for the project.

(B): Please find MSP 4.1.

(A): (Complies and brings up on screen.)

(B): It seems that your project precedes the ISO system?

(A): It does.

(B): This points out that the perhaps the center needs to have transitional coverage for those projects 30% or 50% complete.

(Back to Project Plan.) Your work is commendable but is much more than required. A project plan can be only several paragraphs or pages. It need only address those elements within your scope or control.

For CM you should reference 4.1., 4.2 but tell how it has been tailored for your project. Again, this indicates the need for the center to consider transition plan for ongoing projects. How do you handle CCBs?

(A): I am the project manager and chief engineer. I have a scientist down the hallway. I have a fab person across the hall. We are the team. It is in the CM section. We have weekly telecons with CalB with action items.

(B): Show me how the actions are closed.

(A): (Shows e-mail list on computer.) They are in theses e-mails. It is informal. We are a subcontractor to a University which is a subcontractor to an (aerospace) contractor.

(B): Customer requirements are priority to system requirements to a point. For example, if the customer says don't worry about maintaining a schedule, but your system requires it, then do it. However, if the customer will do V&V not you, then don't do it.

Auditee: OPR for 4.2

(B): What is CM Level 1?

(A): Headquarters Level.

(B): Level 2?

(A): Space Station, Shuttle, Lead Center where several centers involved.

(B): Is X-34 Level 2?

(A): Yes.

(B): Level III doesn't exist on Fastrac? He (auditee this morning?) said that all issues are pushed up to Level 2 or down to Level 4.

Auditee: LDA Project Manager in JA01

(B): Do you have and can I see your Project Plan?

(A): Yes. (Gets it.)

(B): Is it current?

(A): Yes. Another is in work. But we are working to this one.

(B): Do you have a CM plan?

(A): In draft.

(B): Do you chair the CCB as project manager?

(A): No, Scott Croomes does.

(B): Do you have a schedule in the project plan?

(A): No, but I have a current schedule. (He gets it.) This is the local LDA schedule only. I also have a current Space Station schedule.

(B): Can I see your record of RID closure (for a particular review)?

(A): Yes, but they are with Pace & Waite located on the second floor.

(B): Do you have a log of closures?

(A): No.

(B): Do you have an agenda and minutes from the reviews?

(A): Yes. (Gets them.)

(B): There is a disconnect between the CM plan and 4.2.

(Several People discuss): Old plans were done to 555, new to 4.2. Same data should be covered.

(B): Which do you do? Needs to be resolved.

(A): Pace & Waite person not available for RID closure? Can I get it to you later?

(B): Yes.

Date: October 23, 1997 - A.M.

Auditor: Auditor #1

Auditee: Dr. Littles

N What is the quality policy?

A Stated quality policy and said ISO will help achieve policy. Talked about ISO being common sense system. Has advantage of providing good structure. MSFC has already seen improvements from ISO

N Were you involved in the development of the quality policy?

A Yes, I personally made inputs and approved MQM. Bob Schwinghamer led effort.

N What are your thoughts on measuring performance against the quality policy?

A Referred to section on assessing MSFC outlined in Management Review MSP. Mentioned internal audits and other metrics. Frustrated at times in past - put policies in place and people end up not following them. System has to make sure we do what we say.

N What do you see as the biggest quality challenge in upcoming year?

A Transition of Shuttle Projects to single prime contractor (USA). Have to make sure we don't lose something.

N If you saw something wrong in the QMS, how would you change it?

A Would work through the Quality Council. Quality Council has all organization heads on it.

N What do you see coming out of management review meetings?

A Focal point for tracking system, making sure it is effective. Expects them to be more frequent the twice per year.

N Say you get registered in February, what is the next step?

A Registration is independent to implementing our quality system. It doesn't influence how our system works. To date, have focused on flight hardware. Will put everything else in scope.

N Do you have a schedule for that?

A Not yet, haven't set yet. Will do after registration. Will have better idea of what to do now. It has been a tremendous task.

N Are there any questions about NQA or ISO 9000 registration?

A Not really. Interested in getting your report.

N Attitude here is phenomanal.

N Well, I won't take up any more of your time. Appreciate it.

A Thank you.

Date: October 23,1997 - A.M.

Auditor: Auditor #1

Element: 4.4 - Design Control

Lee started off the meeting by stating that yesterday, he did not find any connections with projects and software development. He wants to see what we're doing in that area.

MSFC stated that we develop flight software and simulation software here and that we also provide technical support and oversight over contractor software.

A#1: Do we have a standard for software development?

MSFC: Yes, we used to have a software manual, which is now obsolete. Now we use an OWI, entitled "Software Development Process". This OWI was developed for ISO 9000. MSFC also has a contractor which helps in software development. MSFC provided the auditor with a listing of all ongoing projects and the responsible personnel.

Our OWI lists our software development process down to the working details such as metrics. Our standards are not as strict for simulation as it is for flight software.

A#1: Do we define the minimum tailoring standards?

MSFC: No, not presently.

A#1: Do we use a data dictionary, or standards?

MSFC: No

A#1: Are there any good projects to look at our software development plan?

MSFC: Good ones are Shooting Star (SS), and the Space Station Furnace Facility (SSFF).

After briefly reviewing our OWI, the auditor stated that it was nice.

A#1: Do we have a Software Quality Assurance Plan?

MSFC: Quality is in S&MA and is used during software evaluations.

A#1: Do you use peer review?

MSFC: Yes, at the development level.

A#1: Are there any particular tools used here?

MSFC: Case tools.

A#1: Do we use any particular languages?

MSFC: C, C++, and ADA

A#1: What kind of Configuration Management (CM) tools do we use?

MSFC: We have electronic tools on the UNIX system called Clear Case. Also, we have CM documentation.

A#1: Do you put the tools that you use in the online CM files?

MSFC: We do have a division server.

A#1: Do you have a lot of reusable codes?

MSFC: Historically, no. However, we're trying to do that more.

A#1: Do you have Software Development Folders (SDF)?

MSFC: Yes, we do have folders and development folders.

A#1: Does your Software Quality group do audits on SDF?

MSFC: No. They review documentation and perform analysis.

A#1: I didn't notice the SDFs discussed in the OWI.

MSFC: Probably won't find it in there.

A#1: Could you possibly show me where the peer reviews are discussed in the OWI?

MSFC: It's not in there. We don't go to that level.

A#1: At what level would you generate the SDF, peer reviews, etc.?

MSFC: Below the CSC level, which is the reason they're not in the OWI.

A#1: You might want to re-think that.

MSFC: We will.

A#1: Stated that our OWI was a very good document.

MSFC: It's a work in progress, a living document.

A#1: Good.

MSFC then showed the auditor the shooting star project which has been canceled. We also showed him the Low Cost Booster Technology (LCBT) project, and the SSFF. We explained that the SSFF is in limbo.

The LCBT is used to test FASTRAC which will be tested at the Stennis Space Center. It's ground software being developed by contractors with our oversight.

A#1: Do we use a lot of COTS?

MSFC: As much as possible.

A#1: How do we know that this is the current documentation that we provided to him?

MSFC: We would go to the Lead (Chief Engineer) who would know if it was the latest.

A#1: Who's the chief engineer?

MSFC: We were not sure. There had been a change recently. We think that it's Curtis McNeal.

A#1: I will mention the document control issue. There should be a method in place to readily identify the latest documentation.

A#1: Is there a repository?

MSFC: Yes.

MSFC called the repository to find the latest issue of the document in question. They told us that the document had not been released yet with all of the appropriate signatures.

A#1: How long do you keep quality records on file when a program (Shooting Star) is canceled?

MSFC: We don't know, no requirements are written down anywhere.

A#1: What kind of controls are your going to put on software development?

MSFC: The library is set up so that it looks the same for each user. A code is setup specifically for each project and can be accessed by individuals. One single person is responsible for putting data in and maintaining it.

A#1: Do we have a procedure for the library?

MSFC: No, just discussed that idea last week.

A#1: Do you have tools under CM control in case you have to redo some work?

MSFC: We list all tools used in a test.

A#1: We should think about putting our tools in a CM file.

A#1: Are you managing subcontractors?

MSFC: No, we can't manage them, but we provide technical support. Also, we provide information to the Chief Engineer on performance, which affects the award fee.

A#1: How do you correct any deficiencies in contractor work?

MSFC: Through the Chief Engineer's Office.

A#1: Do you follow-up on this action to make sure that it's completed?

MSFC: If it gets put on a formal action item we will track it.

A#1: Do you participate in Design Reviews?

MSFC: Yes.

A#1: Do you have a person that's responsible for overseeing software CM in projects?

MSFC: Yes. Currently we're developing a software CM board which would interface with all lead project managers.

A#1: You need to develop an OWI that shows a link from software development board to CM - 4.2

MSFC: We have a plan, but we don't have a detailed plan for software development. As a result from yesterday, we will write a procedure identifying where all records are located and how they are safeguarded.

A#1: Concerns: You need to take your OWI down to the CSC level, i.e., SDF, Peer Reviews, etc. I am concerned that employees couldn't locate latest documents. Finally, you haven't put development tools into CM.

Date: October 23, 1997 - P.M.

Auditor: Auditor #1

1:00pm Began interviewing Auditee #1.

[discussing Level II configuration control]

nothing at Level III

only configuration audits, meeting minutes recorded

only had one meeting of configuration control board

Fastrac was a program without a customer

meant to be a demonstration program

X-34 was interested, bantam didn't come to be

put configuration board in place

OSC controls

no MSFC management controls imposed

Program Commitment Agreement

approved contractor's configuration control plan

[list of board members handed to Mr. Bravener]

Auditee #2 - don't see need to list board members every time

new memo every time it changes

Who has to be there?

only those involved

Who has alternates?

R.B. technically, only I have to be there

others are only advisors

engine is intended for multiple customers

should he spin off a separate plan every time there's a new application?

Auditee #3 - don't have need for level 3, just 4 & 5

P04.1 requires it.

R.B. reorganized right in the middle of this
need to write Level II document that will relieve level 3 requirements
unless system provides relief, you have no relief

1:45pm Interview with Training Personnel

set of core competencies
individual development plans (IDP's)
EdTEC
learner / supervisor model

Do you have job descriptions?

formal position descriptions at high level (handled in other group)

[went quickly through a Project Light (?) presentation]

Mentoring program for managers?

yes, call it a process instead of a program

Do you interface with people handling job descriptions to ensure your training supports those descriptions?

yes, in the process of starting IDP

Do you keep program?

S&MA handles certification
functional organizations set requirements, keep records
we meet needs identified by functional organizations

Certification tracking?

S&MA

Person #1 and Person #2 maintain position descriptions

Who developed procedure for holding training records?

upcoming AdminSTAR system

no documents saying how to do it

How do you identify training needs?

core curriculum
varies between support and technical
IDP's

[went to another person's office, who explains AdminSTAR]

Do you have a charter to do this?

part of Project Light

Methodology looks good, but will you be able to employ this by February?

doable
should recommend

2:55pm Interview with Shuttle Personnel

Comply w/ P04.2?

hasn't checked all that out
have tried to add ISO elements to it
(e.g., retention schedule for documents)
forms that get updated, automatically directed to electronic form
references higher level, that's where reference to OWI would be found

Charter for Level III boards?

yes

Membership for CCB?

program manager rep (or alternate)
chief engineer rep
S&MA rep
secretary

3:15pm joined by two other individuals

Transition plan?

no specific plan approved all the way up
more like historical documentation,
oversight to insight, & contractual change to SFOC

When will be fruition?

July '98 for SRB project

out to 2000 for other groups

government sign-off's pulled out of day-to-day operations

Resident Office maintains control of contractor's overall procedures

strategy draft finalized in two months