Semantic Web For Interoperable Standards (SWISS)

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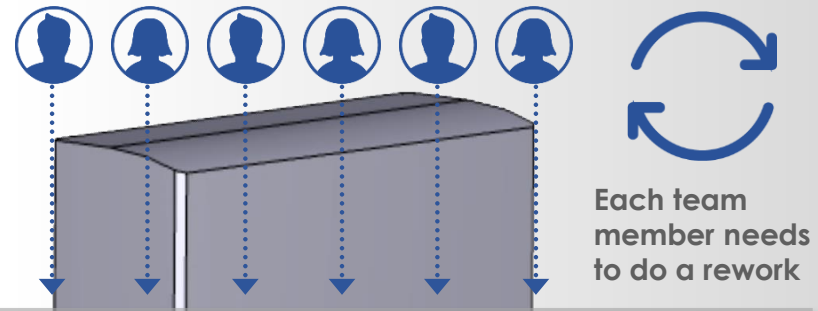# Getting to the Right Requirements…

NOTES:

1. SPEC MIL-W-13855 AWS ANSI Y14.5M-1982 APPLY.

2. MATERIAL: STEEL, BAR, ALLOY 4320 OR 8620.

3. UNLESS OTHERWISE SPECIFIED, ALL EXTERNAL SHARP EDGES SHALL BE BROKEN 0.05 TO 0.25; INTERNAL EDGES R0.2 MAX.

4. UNLESS OTHERWISE SPECIFIED, ALL SURFACE FINISH IS 3.2/

5. PROTECTIVE FINISH: FINISH 5.3.1.1 OR 5.3.2.1 OF MIL-STD-171.

6. QUALITY ASSURANCE PROVISION REQUIREMENTS PER DRAWING 12993884 APPLY.

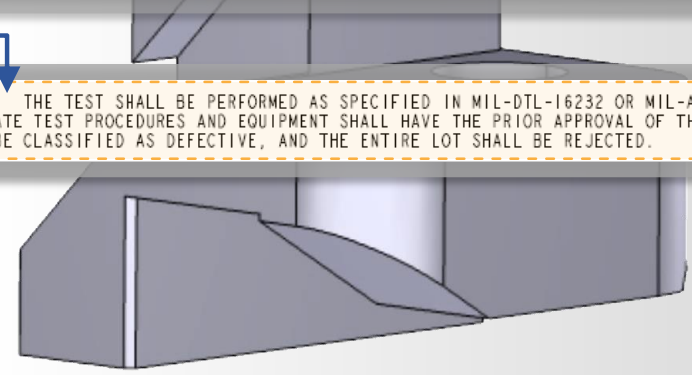7. APPLY CONTRACTORS CAGE CODE THIS APPLIES.

402 — MATERIAL
402 — PROTECTIVE FINISH

108 — HARDNESS
205 — Ra 16 SURFACE ROUGHNESS
206 — PROTECTIVE FINISH
207 — WORKMANSHIP PER MIL-W-6315
502 — SALT SPRAY TEST
503 — COATING WEIGHT
504 — SUPPLEMENTAL OIL SALT SPRAY TEST
505 — CASE DEPTH HARDNESS

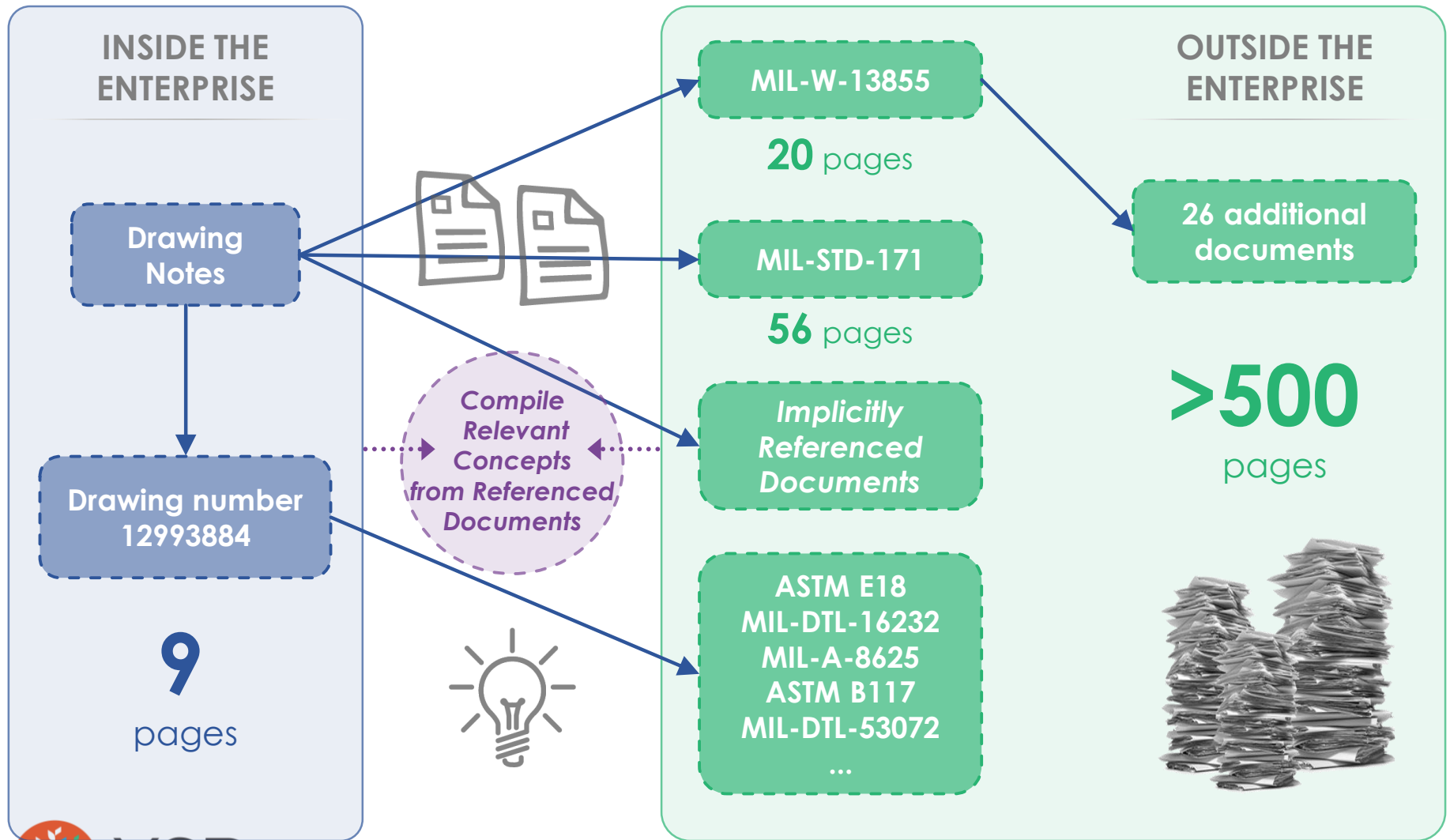|		
*	5.3.1	Manganese phosphate base MIL-DTL-16232, type M
	5.3.1.1	Class 1, supplementary preservative treatment or coating, as specified.
	5.3.1.2	Class 2, supplementary treatment with lubricating oil conforming to MIL-PRF-3150
	5.3.1.3	Class 3, with no supplementary treatment
	5.3.1.4	Class 4, Chemically converted (may be dyed to color as specified) with no supplementary coating or with supplementary coating as specified
*	5.3.2	Zinc phosphate base, MIL-DTL-16232, type Z
	5.3.2.1	Class 1, supplementary preservative treatment or coating, as specified
	5.3.2.2	Class 2, supplementary treatment with preservative conforming to

502 - SALT SPRAY TEST: FIVE (5) PARTS SHALL BE SELECTED FROM EACH LOT. THE TEST SHALL BE PERFORMED AS SPECIFIED IN MIL-DTL-16232 OR MIL-A-8625, AS APPLICABLE, AND ASTM B117 WITHOUT SUPPLEMENTARY OIL. PHOSPHATE TEST PROCEDURES AND EQUIPMENT SHALL HAVE THE PRIOR APPROVAL OF THE GOVERNMENT. IF ANY PART SHOWS EVIDENCE OF CORROSION, IT SHALL BE CLASSIFIED AS DEFECTIVE, AND THE ENTIRE LOT SHALL BE REJECTED.

Each team member needs to do a rework

…Faster

Complex Web of Concepts

INSIDE THE ENTERPRISE

Drawing Notes

Drawing number 12993884

9 pages

Compile Relevant Concepts from Referenced Documents

OUTSIDE THE ENTERPRISE

MIL-W-13855
20 pages

MIL-STD-171
56 pages

Implicitly Referenced Documents

ASTM E18
MIL-DTL-16232
MIL-A-8625
ASTM B117
MIL-DTL-53072
...

26 additional documents

>500 pages

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Digital Specifications?

KSC-C-123J
JULY 17, 2009
Supersedes
KSC-C-123H
September 25, 1995
and incorporates
Change Notices
1 Through 6

SURFACE CLEANLINESS OF GROUND SUPPORT
EQUIPMENT FLUID SYSTEMS,
SPECIFICATION FOR

EAR 99 – NO LICENSE REQUIRED

The information contained in the document is technical in content, but not technical data as defined by the International Traffic in Arms Regulations (ITAR) or the Export Administration Regulations (EAR), and therefore is EAR 99 NLR, no export license required, suitable for public release. [General Prohibition Six (Embargo) applies to all items subject to the EAR, i.e. items on the CCL and within EAR 99 NLR. You may not make an export or re-export contrary to the provisions of part 746 (Embargos and Other Special Controls) of the EAR and 22 CFR part 126.1 of the ITAR.] KSC EDDR #09340

ENGINEERING DIRECTORATE

National Aeronautics and
Space Administration

John F. Kennedy Space Center

KSC-C-123J
July 17, 2009

Table 1. Fluid Surface Cleanliness Levels

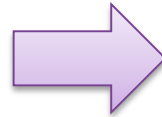| (Table 1A) Particulate Matter Contamination Levels			(Table 1B) NVR Contamination Levels		(Table 1C) Visible Contamination Levels	
Level	Particle Size Range μm (micrometer)	Maximum Number of Particles per 0.1 m²	Level	Maximum NVR (mg/0.1 m²)	Level	Definition
25	<5 5 to 15 >15 to 25 >25	Unlimited * 19 4 0	A	1.0	GC	Freedom from manufacturing residue, dirt, oil, grease, etc.
50	<15 15 to 25 >25 to 50 >50	Unlimited * 17 8 0	B	2.0	VC	The absence of all particulate and nonparticulate matter visible to the normal unaided eye or corrected-vision eye, commercially cleaned.
100	<25 25 to 50 >50 to 100 >100	Unlimited * 68 11 0	C	3.0	UV	Visually clean and inspected with ultraviolet light, requires precision cleaning methods
150	<50 50 to 100 >100 to 150 >150	Unlimited * 47 5 0	D	4.0		Notes Allowable particulate and NVR are based on 0.1 m² (1 ft²)
200	<50 50 to 100 >100 to 200 >200	Unlimited * 154 16 0	E	5.0		Dewpoint and moisture can be waived if the critical surface is normally opened to the atmosphere (Test Method III, A.3.3)
250	<100 100 to 200 >200 to 250 >250	Unlimited * 39 3 0	F	7.0		* Silting is not permitted
300	<100 100 to 250 >250 to 300 >300	Unlimited * 93 3 0	G	10.0		
500	<100 100 to 250 >250 to 500 >500	Unlimited * 1073 27 0	H	15.0		
750	<250 250 to 500 >500 to 750 >750	Unlimited * 205 9 0	J	25.0		
1000	<500 500 to 750 >750 to 1000 >1000	Unlimited * 34 5 0				

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Or This?

Original Drawing Notes

GENERAL NOTES – RAW FORGING

51:- SPECIFIED TOLERANCES INCLUDE DIE CLOSURE, LINEAR, STRAIGHTNESS AND MISMATCH TOLERANCES AS APPLICABLE

52:- DRAFT ANGLES 5° - 7° MATCHED WHERE NECESSARY.

53:- CORNER RADII .16 ±.03 EXCEPT AS NOTED.

54:- FILLET RADII .12 ±.03 EXCEPT AS NOTED.

55 ▷ PADS SHALL BE IN AS-FORGED CONDITION NO GRINDING PERMITTED.

56:- MAXIMUM FLASH EXTENSION .03.

57 ▷ RECORDS OF MILL HEAT AND HEAT TREATMENT TO BE FURNISHED TO VERTOL

58 ▷ MARK PER VERTOL SPEC. MS 1301 GR1A OR 1B

59:- FABRICATE FORGING IN ACCORDANCE WITH SPEC. QQ-M-40.

60 ▷ DATUM DIMENSION (ZERO TOLERANCE) FOR LOCATION OF DATUM PLANE.

61 ▷ ALTERNATE MATERIAL – ZK60A-T5 MAGNESIUM ALLOY PER QQ-M-31 OR AMS 4352. STOCK SIZE 3.00 X 5.80 X 5.10

SWISS Conversion to Text and Data

GENERAL NOTES – RAW FORGING

51- SPECIFIED TO... STRAIGHTNESS A...

52 - DRAFT ANGL...

53 - CORNER RADII 0.16 +... AS NOTED.

54 - FILLET RADII 0.12 +/- 0.03 EXCEPT AS NOTED.

55 – PADS SHA... PERMITTED.

56 - MAXIMUM...

57 - RECORDS OF MILL H... T TREATMENT TO BE FURNISHED TO VERTOL

58 - MARK PER VERTOL SP... MS 1301

59 - FABRICATE FORGING IN ACCORDANCE WITH SPEC. QQ-M-40.

60 – DATUM DIMENSIONS (ZERO TOLERANCE) FOR LOCATION OF DATUM PLANE.

61 - ALTERNATE MATERIAL~ ZK60A-T5 MAGNESIUM ALLOY PER GQ-4-31 OR AMS 4352.

MATERIAL :   MAGNESIUM
PROCESS :   FORGING
STATE   :   CANCELLED

FORGING IN ACCORDANCE WITH SPEC. QQ-M-40

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Relevant efforts

- [NISO-STS Standard](#)
  - Syntactic
- [Boeing Standards as Digital Data](#)
- SysML

DEMONSTRATION OF SWISS

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Summary

- Need to serve users but make it easy for publishers

- Ontology for parts, materials and processes allows for logical reasoning

- Semantics may be populated with light-weight AI processes