

 <b>Eskom</b>	<b>Standard</b>	<b>Technology</b>
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Title: **TECHNICAL EVALUATION  
STANDARD FOR STATION  
CLASS SURGE ARRESTERS**

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Date: 29/10/2020

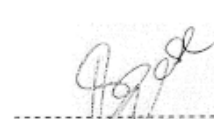
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Date: 28/10/2020

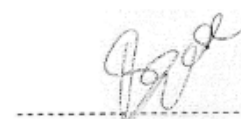
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## **1. Introduction**

The document is aimed at setting the standard technical evaluation criteria to be used when evaluating the tender submissions for station class surge arresters, for Eskom. It has annexes developed to address various aspects required to perform the technical evaluation.

This document contains both the evaluation criteria used for the desktop evaluation and the factory evaluation.

This document was compiled in accordance with [1].

## **2. Supporting clauses**

### **2.1 Scope**

This document covers the technical evaluation process and criteria for station class surge arresters as covered under Eskom standard within Eskom Holdings SOC (Ltd). This document contains the technical evaluation criteria and associated documents for station class surge arresters.

#### **2.1.1 Purpose**

The document addresses the standard documented technical evaluation criteria to be used when evaluating the tender submission in line with the Eskom Holdings SOC (Ltd) requirement.

#### **2.1.2 Applicability**

This document shall apply throughout Eskom Holdings Limited Divisions.

### **2.2 Normative/informative references**

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

#### **2.2.1 Normative**

- [1] 32-1034, Rev 4 - Eskom procurement and supply chain management.
- [2] 240-75540566, Rev 5 – Specification for station class metal oxide surge arrestors.
- [3] ISO 9001, Quality Management Systems.

#### **2.2.2 Informative**

- [4] 32-9, Definition of Eskom documents
- [5] 32-644, Eskom documentation management standard.
- [6] 474-65, Operating manual of the Steering Committee of Technologies (SCOT).
- [7] QM 58, Supplier contract quality requirements specification.

### **2.3 Definitions**

#### **2.3.1 General**

<b>Definition</b>	<b>Description</b>
<b>Eskom Evaluating Representative(s)</b>	The person(s) appointed by Eskom to perform evaluation of tender submission(s) in line with Eskom requirements.

### 2.3.2 Disclosure classification

**Controlled disclosure:** controlled disclosure to external parties (either enforced by law, or discretionary).

## 2.4 Abbreviations

Abbreviation	Description
SCOT	Study Committee of Technologies
HV	High Voltage
SC	Study Committee
n/a	not applicable
OEM	Original Equipment Manufacturer
OU	Operating Unit
PDE	Power Delivery Engineering
QCP	Quality Control Plan
SA	Surge Arrester

## 2.5 Roles and responsibilities

The designated Technical Specialist shall ensure that this document is updated, renewed and current at all times.

## 2.6 Process for monitoring

Not Applicable

## 2.7 Related/supporting documents

Not Applicable

## 3. Technical tender evaluation procedure

The technical evaluation procedure is specific to each item type. The evaluation method has two main parts: desktop and factory assessment, which are related. The desktop assessment may be used by OU's to determine technical suitability when required to do a technical evaluation for a regional tender. The need for the associated factory assessment will be determined as per the approved tender strategy.

### 3.1 Desktop evaluation

This evaluation exercise is performed by the Eskom evaluating representatives. This part of the evaluation starts when submissions are opened for the first time. It begins at evaluation of the mandatory criteria (Level 1), then proceeds to the scoring – Level 2, and refers to relevant annex for each item required.

The Eskom assessment representatives will go through the details of the returnable submissions that are required and will ensure that Level 1 qualification criteria are met.

Submissions that pass Level 1 will be allocated 90 points within the framework of the Eskom scoring mechanism. Submissions that obtain a NO for any of the level 1 criteria will be scored 0 out of 90. Scoring in Level 2 consists of discretionary criteria and will be assessed out of 10 points. Thus the full score attainable will be 100 points if all criteria are met in levels 1 and 2.

The minimum threshold for tenderers to qualify in the desktop evaluation is not less than 90 points.

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## **3.2 Factory assessment**

This assessment is performed on the basis of assessing the supplier's capability to enter into a contract with Eskom with respect to a specific product or service.

This report and any actions that are listed or recommended as a result of this assessment, is by no means a confirmation or guarantee that any contract will be entered into by Eskom and the supplier or that post contract performance has been achieved.

Any actions undertaken by the supplier as a consequence of this report is for the suppliers account. Any liability for the said actions undertaken by the supplier is not transferrable to Eskom in any way.

The assessment team has no authority or responsibility in the decision taken by Eskom with respect to contracting for a product or service.

Any statements, intentions and/or actions expressed by the assessment team during the assessment and post the assessment has no effect, and does not constitute any liability to Eskom with regards to contract placement or post contract performance guarantees.

### **3.2.1 Scope**

Eskom will do factory assessments to assess the ability and readiness of the supplier for supplying/manufacturing surge arrestors for Eskom should the need arise. Additionally, if needed, items evaluated in the desktop evaluation may be assessed further at factory together with any information that may have been omitted during the initial evaluation or requested on the part of the evaluating team.

Eskom assessment representative(s) will arrange a visit to the factory that has qualified for factory evaluation.

At the factory, the Eskom assessment representative(s) will conduct the assessment through the use of checklists. The checklists are used to verify capability of the factory to supply the required product and compliance to the equipment specification and tender submission documents. At the end of this exercise, the Eskom assessment representative(s) will list all the deviations on the evaluation document. The representative will conduct formal discussions of the deviations in line with Eskom's requirements. Herein, the Tenderer and/or their OEM shall indicate whether they agree or disagree to meet Eskom requirements upon contract award. At the end, Eskom, the Tenderer and OEM representatives will sign the assessment document which continues to be used for concluding the Technical Evaluation report. Where the Tenderer and OEM agreed to meet Eskom requirements, all of these are documented for contract award purpose and verification afterwards. This document also details the procedure to be followed when conducting a factory assessment for surge arrestors.

### **3.2.2 Purpose**

Assessments are performed as part of the standard practice within Eskom to determine whether a supplier has the capability and capacity to manufacture surge arrestors, from a business, technical and quality perspective. The assessment also confirms the supplier's compliance to the equipment specification and tender submission documents. This document is intended to formalise the factory assessment procedure followed for surge arrestors.

### **3.2.3 Confidentiality**

All information reviewed, observed, recorded during and reported as a result of this assessment will be treated as, and remains highly confidential. The procurement team and the supplier team will be the only parties included in the distribution list.

### **3.2.4 Assessment Methodology**

The assessment will follow a documented supplier capability and capacity assessment criteria as shown in annexure 1. These criteria are intended to assess the technical capabilities of the supplier and the product offered for tender to ensure it meets the tender requirements.

The minimum threshold for tenderers to qualify in the factory evaluation is not less than 80%, i.e. not less than 216 out of 270.

During the assessment the following areas are evaluated in detail:

- Manufacturing Methods
- Workshop Practices
- Design Practices and Application
- Testing Facility and Practices
- Raw material Procurement, Storage and Sub-contractor practices
- Site and Other Services
- Factory Performance (incl. on-time delivery and factory failure rate)

The factory will be scored according to the criteria outlined in the table below. The total score is out of 270. The full criterion is listed in Annex B.

0	Total non-compliance to the agreed requirements
2	Major deviation to the agreed requirements
4	Minor deviation to the agreed requirements
6	No deviation to the agreed requirements / fully compliant

#### 4. Authorization

This document has been circulated to:

Name and surname	Designation
Bheki Ntshangase	Senior Manager: PDE – HV Plant
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Percy Seboco	Senior Technologist
Fernando Witbooi	Chief Technologist
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Krishna Naidoo	Senior Engineer
Mogale Sekgobela	Engineer
Yurisha Reddy	Senior Advisor

#### 5. Revisions

Date	Rev	Compiler	Remarks
Nov 2020	4	K Kleinhans	Scoring criteria made clearer and aligning with new revision of 240-75540566.

Date	Rev	Compiler	Remarks
April 2015	3	T Govender	Evaluation criteria were optimised to allow for assessment of minor deviations. Objective criteria scoring updated
June 2014	2	T Govender	Updated to reflect changes in procurement policy and to include factory evaluation criteria.
May 2014	1	T Govender	New document required for Station class Arresters

## 6. Development team

The following people were involved in the development of this document:

- K Kleinhans
- F Witbooi
- M Sekgobela
- P Schutte
- K Naidoo
- P Seboco
- S Bipat
- M Khan
- S Hloboni
- M White

## 7. Acknowledgements

The Station Class Surge Arrester Specification and Evaluation Criteria Revisions Work Group is acknowledged for their input into this document.

**Annex A – Surge arrester technical evaluation criteria for initial evaluation****Table A.1: Surge arrester technical evaluation criteria for desktop exercise**

Specification Referred to	[2] 240-75540566 Specification for station class metal oxide surge arrestors		
Voltage Class Referred to	All items		
<b>Level-1 Basic Compliance: Tender Deliverables and Mandatory Technical Requirements</b> <b>Weight – 90 points</b>			
1. Tender Deliverables			
Activity	Clause in [2]	Compliance	Qualification Criteria
1.1.1 Is completed Technical Schedule B submitted?	Annex B i.e. for each specific item	Yes/No	Level 1
1.1.2 Is the test report summary sheet completed and submitted together with all the required test reports and other requested information?	Annex C i.e. for each specific item	Yes/No	Level 1
1.1.3 Have the outlines and characteristic curves been submitted?	Annex D i.e. for each specific item	Yes/No	Level 1
1.1.4 Is the Deviations and Declaration form submitted and signed?	Annex E i.e. for each specific item	Yes/No	Level 1
1.1.5 Is all required information submitted in English?	3.1.2 (o)	Yes/No	Level 1
1.1.6 Has evidence supporting that all required type testing has been performed at an accredited test facility been submitted? OR 1.1.7 At the factory and witnessed by an accredited body and supporting information supplied?	Annex C i.e. for each specific item  3.2.1 c) and d)	Yes/No	Level 1
2. SA Functional Requirements			
Activity	Clause in [2]	Compliance	Qualification Criteria
2.1.1 Electrical characteristics meet requirement for specific voltage level	Annex B-2 for each specific item	Yes/No	Level 1
2.1.2 Arrester housing meet requirements	3.1.2, and Annex B-4 for each specific item	Yes/No	Level 1
2.1.3 Mounting arrangement meet requirements	3.1.3.2 Annex B-5 for each specific item	Yes/No	Level 1
2.1.4 Terminal arrangement meet requirements	3.1.3.3 Annex B-6 & B-7 for each specific item	Yes/No	Level 1
3. Type Test Requirements: All tests shall be conducted in accordance to IEC60099 and IEC60815, and passed			
3.1.1 Insulation withstand test on the arrester housing	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.2 Residual voltage test	3.2.2, and Annex C for each specific item	Yes/No	Level 1

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3.1.3 Test to verify long term stability under continuous operating voltage	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.4 Repetitive charge transfer withstand	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.5 Heat dissipation behaviour verification of test sample	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.6 Operating duty test	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.7 Power-frequency voltage versus time	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.8 Short-circuit tests	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.9 Bending test	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.10 Environmental tests (Applicable to Porcelain housings)	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.11 Seal leak rate (Applicable to Porcelain housings)	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.12 Radio interference voltage (RIV) test	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.13 Weather ageing	3.2.2, and Annex C for each specific item	Yes/No	Level 1
3.1.14 Polymer arresters at 132kV and below test requirements	3.2.2(f), and Annex C for each specific item	Yes/No	Level 1

Note:

A) List of deviations and missing information to be made by evaluator for all sections evaluated.

B) Should a supplier provisionally qualify for a factory evaluation, all outstanding information as specified in [2] may be requested. The information must be supplied within 5 working days. Information supplied will be evaluated and must be found to be correct and fully meeting expectations before any further evaluation can be undertaken.

**Level-2 Scoring Criteria****Weight – 10 points**

Activity	Clause in [2]	Weight	Score
Packaging, Transport and Storage information	3.4	5	0 – Minimal Information (Below level of detail requested in [2]) 3 – Acceptable Information (Meeting level of detail requested in [2]) 5 – Detailed Information (Exceeding level of detail requested in [2])
Installation and assembly information	3.3.5	5	0 – Minimal Information (Below level of detail requested in [2]) 3 – Acceptable Information (Meeting level of detail requested in [2]) 5 – Detailed Information (Exceeding level of detail requested in [2])

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**Annex B – Factory Evaluation Criteria**

No:	Technical Questions	Score	Criteria	Evidence and comments
1	Work Systems	30		
1.1	Works procedures and instructions: a. What work procedures are in place? b. What ISO standards are used		If both in place and documents are traceable then = 6 Both in place, but non-traceable documents = 4 If either 'a' or 'b' are omitted = 2 None = 0	
1.2	Continuous improvement and International compliance: Do they comply with IEC 60099 and other associated IEC/IEEE specs fully, and are persons of the OEM on the latest CIGRE working groups regarding surge arresters?		They comply with IEC60099 and other associated IEC/IEEE specs fully, and are on latest CIGRE working groups regarding surge arresters = 6 They comply fully to IEC60099 and other associated IEC/IEEE specs fully = 4 Partial compliance to IEC60099 and other associated IEC/IEEE specs = 2 Non-compliance to IEC/IEEE specs = 0	
1.3	Quality control plans and systems (PQPs) (choose one of each)		QCP's and PQP's in place and traceable = 6 QCP's and PQP's in place = 4 Some QCP's and PQP's in place = 2 None in place = 0	
1.4	Inspections, audits and reviews (choose one of each)		All inspections, audits and reviews in place, up to date and traceable = 6 All inspections, audits and reviews in place = 4 Some inspections, audits and reviews in place = 2 None in place = 0	

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No:	Technical Questions	Score	Criteria	Evidence and comments
1.5	Staff training and accreditation systems and controls What training do they offer their staff? Who are they accredited with? (choose minimum 2 random staff members)		Staff trained and accredited, and traceable = 6 Staff trained and traceable = 4 Staff trained = 2 Staff not trained = 0	
2	Operation – Manufacturing methods	78		
2.1	Which composite material is used, and how is it checked?		All composite material quality checked, handled, stored and catalogued correctly, and is traceable = 6 All composite material quality checked, stored and catalogued correctly = 4 Some of the above checks not done = 2 No tracing of composite material, or stored incorrectly = 0	
2.2	Are blocks manufactured in-house? If not, how is the intake and use of blocks handled? What are the checks done on these blocks?		All blocks quality checked, handled, stored and catalogued correctly, and is traceable = 6 All blocks quality checked, stored and catalogued correctly = 4 Some of the above checks not done = 2 No tracing of blocks, or stored incorrectly = 0	
2.3	Which fibreglass material is used, and how is it checked?		All fibreglass material quality checked, handled, stored and catalogued correctly, and is traceable = 6 All fibreglass material quality checked, stored and catalogued correctly = 4 Some of the above checks not done = 2 No tracing of fibreglass material, or stored incorrectly = 0	

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No:	Technical Questions	Score	Criteria	Evidence and comments
2.4	Which metallic parts are used, and how is it checked?		All metallic parts quality checked, handled, stored and catalogued correctly, and is traceable = 6 All metallic parts quality checked, stored and catalogued correctly = 4 Some of the above checks not done = 2 No tracing of metallic parts, or stored incorrectly = 0	
2.5	Is the test bay area closed off?		Yes = 6 Partially closed off = 3 No = 0	
2.6	What is the quality and availability of test reports?		Test certificate has all relevant data, easy to read and understand, signed off by authorised personnel and is traceable = 6 Test certificate has all relevant data, easy to read and understand, signed off by authorised personnel = 4 Test certificate has relevant data, not signed off by authorised personnel = 2 Test certificates do not display all relevant criteria = 0	
2.7	Clean conditions in workshop		Clean-room environment (dust-free, static-free) = 6 Workshop is clean overall = 4 Workshop is fairly clean = 2 Workshop not clean = 0	
2.8	What is the supplier's estimate of current capacity limit?		Can meet on time delivery for our unit = 6 Some potential delays for the production of our unit = 3 Major delays anticipated = 0	
2.9	Are there any bottlenecks in the manufacturing process? (e.g., test bay, block stacking, etc.)		Can meet on time delivery for our units = 6 Some potential delays for the production of our unit = 3 Major delays anticipated = 0	

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No:	Technical Questions	Score	Criteria	Evidence and comments
2.10	Does the supplier intend to make use of a substitute factory if capacity increase is required? If so, has it been evaluated for this project?		Yes, fully accredited = 6 Yes, not accredited yet = 0	
2.11	How has the supplier expedited orders if required?		Adequate process to fast-track orders, and is traceable = 6 Adequate process to fast-track orders = 4 Process exists, but needs improvement = 2 No process = 0	
2.12	Plant Capacity: can the factory provide all the equipment, and to Eskom's specification		Aligns completely to Eskom specifications = 6 Partially aligns to Eskom specifications = 3 Doesn't align to Eskom specifications = 0	
2.13	What are factory failure rates for the last 5 years and how is daily limit managed if exceeded?		Less than 1%, and traceable = 6 Less than 1% = 4 Between 1-2% = 2 Greater than 2% = 0	
3	Technical Infrastructure	18		
3.1	What manufacturing equipment/tools does the supplier have, who manufactures this equipment, what is the capacity of this equipment?		Equipment/tools bought from accredited and known manufacturers, and traceable = 6 Equipment/tools bought from accredited and known manufacturers = 4 Some equipment/tools bought from accredited and known manufacturers = 2 Equipment/tools bought from unrecognised manufacturers = 0	

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No:	Technical Questions	Score	Criteria	Evidence and comments
3.2	How are supervisors and workers trained on handling equipment?		Certificate or accreditation, and traceable = 6 Certificate or accreditation = 4 Some workers accredited, certified = 2 No certificate or accreditation = 0	
3.3	What is the maintenance operating model for the production line?		Complete maintenance records, and traceable = 6 Complete maintenance records = 4 Incomplete maintenance records, procedures = 2 Limited/no maintenance records = 0	
4	Design Practices and Application	72		
4.1	Please describe your design criteria basis and guidelines – Electrical, Mechanical		Clear tools and software for designs = 6 Have tools (software) available, however no clear philosophy on how tools are employed = 4 Have tools only = 2 No philosophy = 0	
4.2	What is the design team's composition/structure, numbers, experience levels?		Chief engineer has >10 years' experience in design, CV's, certifications are current = 6 Chief engineer has 5-10 years' experience in design, CV's and/or certifications are not current = 3 No CV's, certifications = 0	
4.3	Please provide design process flowchart / systems for similar products		Up to date flowchart = 6 Flowchart not current = 3 No flowchart = 0	
4.4	How do you ensure internal design verification/ validation as part of your design process?		Authorised person checks and signs off design = 6 No checks, self-release = 0	

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No:	Technical Questions	Score	Criteria	Evidence and comments
4.5	What is the process to deal with design change requests (concession), internal or external?		Formalised design review process that includes customer, internal personnel and design expert, plan and schedule = 6 No formalised design review process = 0	
4.6	Following final design approval, how is the final design linked to the manufacturing process?		Approved inspection and test plans includes hold points to verify execution of design = 6 No monitoring system = 0	
4.7	What engineering tools are used for the relevant designs? What is the staff's level of experience with these tools?		Tools are certified and up to date, calibration, software updates – must be of the latest version, user accreditation must be current = 6 Some certification of tools, software, user has accreditation but not of latest value = 3 No certified tools = 0	
4.8	How do you ensure continuous development of staff with respect to design systems and philosophy? (i.e., software and manually)		Training programme for all involved staff, individual development plans for staff, adequate and up to date learning = 6 Training programme exists, process not adequate = 3 No continuous development = 0	
4.9	How does the system flag excursions outside internal design rules?		Flags excursions, calibration is current = 6 Flags some but not all = 3 No excursions flagged, not calibrated properly = 0	
4.10	As design technology backup, who are your technology partners?		Partners aligned with Eskom-approved partners = 6 Partners not aligned with Eskom-approved partners = 3 None = 0	
4.11	How do you support/co-ordinate the use of academic/research institutions for technology support, if any?		Clear functional role and responsibilities, collaboration with universities (i.e., sponsorship of students) = 6 No = 0	

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No:	Technical Questions	Score	Criteria	Evidence and comments
4.12	How do you support/co-ordinate external partners for component manufacturers, if any?		Clear functional role and responsibilities, collaboration with manufacturers = 6 No = 0	
5	Testing Facility and Practices	48		
5.1	Please provide proof of calibration of all test equipment		Calibrated within date, done by accredited person, and traceable = 6 Calibrated within date, done by accredited person = 4 Calibrated within date = 2 Not calibrated = 0	
5.2	Test capabilities		Fully capable of performing type, acceptance and routing tests, and is traceable = 6 Fully capable of performing acceptance and routing tests, and is traceable = 4 Capable of performing acceptance and routing tests = 2 Cannot perform any tests = 0	
5.3	Measurement of reference voltage ( $U_{ref}$ )		Within IEC60099-4, and traceable = 6 Not within IEC60099-4 = 0	
5.4	Residual voltage test		Within IEC60099-4, and traceable = 6 Not within IEC60099-4 = 0	
5.5	Internal partial discharge test		Within IEC60099-4, and traceable = 6 Not within IEC60099-4 = 0	
5.6	Leakage check		Within IEC60099-4, and traceable (or N/A) = 6 Not within IEC60099-4 = 0	

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No:	Technical Questions	Score	Criteria	Evidence and comments
5.7	Current distribution test for multi-column arrester		Within IEC60099-4, and traceable = 6 Not within IEC60099-4 = 0	
5.8	Reports, timeousness, quality thereof		All test reports produced immediately, checked by accredited person, and is traceable = 6 All test reports produced immediately, and is traceable = 4 Test reports produced = 2 No test report available = 0	
6	Research and Development capabilities	24		
6.1	Do you own your R&D? If not, who are R&D partners?		Accredited and validation should be current = 6 Not accredited and validation is not current = 0	
6.2	How is R&D triggered in your organisation?		Clear triggers for R&D – optimising for performance or cost, continuous improvement (i.e., new Line-to-ground clearance requirements), and traceable = 6 Clear triggers for R&D – optimising for performance or cost, continuous improvement = 4 R&D supported, but no clear mandate = 2 No support or mandate for R&D = 0	
6.3	What initiatives are you pursuing to introduce the new IEC60099-4?		Pursuing newest technology actively = 6 No research into the new IEC60099-4 = 0	
6.4	Do you outsource your designs? How much of your designs are outsourced? What controls are in place		Do not outsource = 6 Outsource, accredited and validation should be current, controls should be in place = 3 Outsource but not accredited and validation, no clear controls = 0	

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