

Control of equipment on masts, towers and rooftops Standard

(Formerly BOP018)

Sign Off					
Document Number		EI-SD-005		Version	1.0
Reviewer	Date	Name	Signed	Role	
Author	08/01/2020	Mike Elliott	<i>Signed in IMS</i>	Structural Engineering Manager	
Checker	14/01/2020	Duncan Gould	<i>Signed in IMS</i>	Principal Structural Engineer	
Approved	20/01/20	Mike Elliott	<i>Signed in IMS</i>	Structural Engineering Manager	

Version History		
Version	Date	Purpose of Issue
1.0	20/01/20	Initial issue in IMS, formerly BOP018.

All changes to this revision of the document are denoted by a line down the right-hand side of the applicable paragraph.

Table of Contents

1	Standard Reference	3
2	Purpose	3
3	Scope	3
4	Overview	3
5	Roles and Responsibilities	3
6	Standard	3
6.1	Loading changes	3
6.1.1	Feasibility.....	3
6.1.2	Structural Assessment.....	4
6.1.3	Design.....	4
6.1.4	Installation	4
6.1.5	Removal / Relocation of Equipment	4
6.2	Modification or removal of Structural Elements on Arqiva structures	4
6.3	Site Access.....	5
6.4	On-site Supervision	5
6.5	Method Statements & Risk Assessments	6
6.6	Labelling of equipment installed of antenna support structures	6
6.7	Maintenance of equipment installed of antenna support structures.....	6
6.8	Equipment inspection tagging	6
6.9	Safe to climb certificates	6
7	List of Related Documents	7

1 Standard Reference

The applicability of standards for this document is listed in the IMS document register, QY-FT-012.

2 Purpose

The purpose of this document is to define the rules to be followed for all works on Arqiva owned or managed sites/structures that have a structural loading implication. These rules are in place to ensure that sufficient controls and measures are applied to safeguard Arqiva's sites and structures ensuring that they remain safe and fit for purpose.

3 Scope

This document defines the requirements that shall be followed when equipment is proposed to be installed, relocated or removed from an Arqiva antenna support structure. Equipment can include antennas, dishes, feeders, support steelwork, ladders, fall arrest systems and any other items which may cause a change in loading on a structure.

Also included are the requirements for the certification, labelling and maintenance of structures and the equipment supported by them.

This document applies to all persons who design or manage installations on Arqiva sites including Arqiva employees, Site Sharers and Contractors. Site Sharers are responsible for and liable for any work undertaken by their own appointed contractors or sub-contractors on an Arqiva site, and for ensuring compliance with the requirements of this policy.

4 Overview

This document should be read in conjunction with:

- EI-PY-001 Structural Governance Policy
- DN-SD-008 Structural Design Governance Standard

References are made to other support information including policies and standards and these shall be adhered to as applicable to the proposal.

5 Roles and Responsibilities

The role of Structural Design Authority is held by the Arqiva Structural Engineering Manager and activities are delegated to individuals within the Arqiva Structural Engineering Team or other authorised Structural Engineers.

The Arqiva Structural Engineering team ensures that the design of installations on Arqiva sites achieves satisfactory levels of structural integrity and safety. All persons who influence the design of an installation are considered to be Designers as defined by the CDM Regulations 2015.

6 Standard

6.1 Loading changes

The requirements contained in this document shall be met when a loading change is proposed to an Arqiva structure. All such proposals shall follow the provisions of the Arqiva Portfolio Management Agreement (PMA) Schedule 5 Build, Alter and Install Process.

6.1.1 Feasibility

All loading changes to Arqiva owned antenna support structures shall be subject to a review (feasibility) by an authorised Structural Engineer in order that the structural implications of the proposal can be assessed.

The approval of requests for loading changes, and any associated conditions, shall be given as detailed in DN-SD-008 Structural Design Governance Standard.

6.1.2 Structural Assessment

To ensure the safety and structural integrity of a structure the total loading imposed upon it (by the antennas, feeders and all other ancillary equipment of any nature) must be known and assessed against structural design parameters in accordance with BOP310 Mast and Tower Design and Appraisal Policy.

No antenna, feeder, or any other ancillary equipment shall be installed, relocated or removed, without the approval of the authorised Structural Engineer.

In order to assess a change of loading the engineer must have the following accurate data:

1. Full details of the equipment proposed, including physical dimensions, weight, mounting height, orientation, mounting or access steelwork, cabling requirements and survival wind speed of the equipment.
2. Temporary loading likely to be imposed during erection or removal.

The authorised Structural Engineer shall also consider the RF implications of the proposal to identify any increased risks arising from additional non-ionising radiation and if RF coupling or intermodulation products between new and existing antennas is thought to be an issue.

6.1.3 Design

The design of all structural elements of an Arqiva owned or managed asset, including masts, towers, antennas, ancillary steelwork, grillages, etc, shall be carried out in accordance with DN-SD-008 Structural Design Governance Standard.

Arqiva maintains standards and specifications which provide rules and guidance for the design of infrastructure on Arqiva sites including:

- BD-TS-001 Guide to the Design and Installation of Antenna and Feeder Support Steelwork
- BOP630 Requirements for the Design of Single or Multi-user Roof Top Installations
- BOS010 Generic Specification for the Design, Fabrication and Erection of Masts

Design compliance will be deemed to have been achieved when these requirements have been met. As Design Authority, the Structural Engineering team shall review and/or approve detailed design proposals for installations in accordance to the levels of governance specified in DN-SD-008. No work on an Arqiva site shall be undertaken until the appropriate approvals have been achieved.

6.1.4 Installation

In order to prevent damage to assets and interruptions to services all works must be carefully designed, planned, implemented and, on occasions, supervised. The requirement for supervision is specified in BOW011 The Criteria for the Provision of Site Attendance.

Rules are in place to ensure that sufficient controls and measures are applied to safeguard Arqiva's structures ensuring that all works are carried out in a way that does not compromise the safety of the public, Arqiva staff, Site Sharers or Contractors.

No activities involving structural works shall be undertaken on an Arqiva site until the appropriate approvals have been achieved which may include approval of designs, method statements and risk assessments.

6.1.5 Removal / Relocation of Equipment

The removal or relocation of equipment on a structure constitutes a loading change. As such, these proposals are required to follow the same rules and processes as installations.

6.2 Modification or removal of Structural Elements on Arqiva structures

Without exception, there shall be no modifications or removal of structural elements to any Arqiva structure without written approval from the Structural Engineering (SE) team and this work will always require supervision by Arqiva. Structural elements shall include, but not be limited to, bracings, bolts and stay components.

The removal of part or all of a structure also requires approval from the Structural Engineering team who will provide information to assist with the production of a method statement.

The Contractor shall include within their method statement the requirement for the modification or removal (including temporary removal). The Contractor will identify/specify the exact member(s) to be removed

together with the date, duration and sequence of the proposed removal. The method statement shall be submitted to the relevant Arqiva project manager who will issue a request to the SE team for approval. If approved, a Permit to modify or remove - structural elements on an Arqiva structure – IM2810 will be issued and have a unique reference number.

It should be noted that, depending on the nature of the element to be modified or removed, the SE team will respond within 1 to 4 working days. To prevent site delays, the request should be made at least 5 working days in advance of the planned site works. The approval may contain conditions (usually related to wind speed), which must be checked prior to removal. The written approval should be attached to the Contractor's method statement. This documentation will be made available to the Arqiva Supervisor prior to the work commencing.

The Arqiva Supervisor has the authority to suspend the works if the written SE approval is not available on site or if any specified conditions are not being met or if he has any concerns over the intended works. If a wind speed is specified, above which works cannot proceed, wind speed should be measured using an appropriate and properly maintained measuring device. The person taking the measurement should be properly trained in its use.

Structural members should only be replaced using new bolts of the correct grade and length, ensuring that the shank length matches the width of the jointed steel members. The SE team will confirm the specification of replacement bolts if requested.

The removed steel member shall be inspected on site by the Contractor and Arqiva Supervisor and the SE team notified if any damage has occurred either during or prior to the removal. Any damaged paintwork shall be repaired at the end of works to prevent corrosion.

If the work methodology on site needs to be amended and structural elements need to be removed that were not previously identified in the method statement, the removal of all structural elements must cease and a revised request submitted through the approval procedure detailed above.

The Contractor must advise the Arqiva Supervisor when the removal of the structural element is about to commence and confirm when the reinstallation has been completed.

6.3 Site Access

All access to site must be in accordance with the Arqiva Site Access Standard EI-SD-002. Any visits to sites without compliance with this standard will be treated as an incident or near miss and will be investigated as such.

All work on Arqiva structures must be conducted in accordance with the following rules.

- BOW142 - SHE Rules
- BOW109 - SHE Rules for Contractors
- SHE001 - RF Safety
- SHE008 - Climbing & Working at Height on Masts & Towers

6.4 On-site Supervision

The requirement for on-site supervision is determined by the criteria set out in Arqiva's Site Access Policy and is specified in BOW011 The Criteria for the Provision of Site Attendance. Depending on the scope of work and methodology, supervision may also be required to ensure the safety and integrity of the assets from a structural perspective.

Confirmation of whether supervision is required for structural reasons will be provided by the Structural Engineer as part of the feasibility review. This will also be confirmed on receipt of an access request in accordance with the site access standard. The requirement for supervision must be incorporated in the planning and costing of any installation project.

Where site activities are required to be supervised by Arqiva, the supervisor shall be given a copy of the approved drawing relevant to the work being carried out by the Site Sharer's contractor before any works proceed, together with appropriate method statements and risk assessments. If any of these documents are not available or are inappropriate, the Arqiva Supervisor has the authority to suspend the works until such time that appropriate documents are available.

If it is clear that the installation cannot proceed in accordance with the approved drawing e.g. an existing antenna is in the way and the position of the new antenna must be modified as a result, the Arqiva Supervisor will contact the SE team to obtain authorisation. If authorised, the installation may proceed however the

Arqiva Supervisor shall mark-up the approved drawing with the details of the modified position and return it to the SE team.

6.5 Method Statements & Risk Assessments

Some activities require a method statement and risk assessment to be submitted for prior approval to the Arqiva Structural Engineering (SE) team. This includes any work that involves the modification to or removal of structural elements from an Arqiva structure, or any work that could compromise the structural integrity of an Arqiva structure. The modification or removal of structural elements must follow the procedure detailed in clause 8.0. If there is any doubt regarding the criticality of carrying out structural works on Arqiva's towers and masts, further guidance can be obtained from the SE team.

Where site activities are required to be supervised by Arqiva, a method statement shall be made available to the Arqiva Supervisor on site prior to work commencing.

Method statements must adequately describe the task, the sequence and methodology to be employed and the number of personnel required for the task to be safely performed. They should be completed by a competent and experienced person familiar with the type of works to be undertaken.

Irrespective of the need for method statements, the Contractor must demonstrate to the Arqiva Supervisor that a safe method of work is to be adopted at all times during the work.

Risk assessments should be provided in accordance with health and safety legislation. Where a method statement is required, an accompanying risk assessment shall always be provided.

6.6 Labelling of equipment installed of antenna support structures

Equipment installed on an Arqiva site shall be labelled as instructed or directed by Arqiva. As a minimum, permanent labels shall be securely fixed to antenna mounting steelwork and to feeder cables at both ends and at each platform/stay level on the structure and at the base of the structure and at a point where the feeder cables enter the building or cabin. The labels shall carry an approved Arqiva abbreviation denoting the antenna reference. The labels must be installed so as to be easily read.

6.7 Maintenance of equipment installed of antenna support structures

Each sharer/customer is responsible for ensuring their equipment is maintained in reasonable and safe repair and condition. This includes responsibility for ensuring third party connections to equipment are safe and carrying out necessary remedial work in a timely manner.

Where requested by Arqiva, each sharer/customer will provide Arqiva with evidence reasonably required to demonstrate that equipment is in safe repair and condition and that appropriate maintenance arrangements are in place and being adhered to.

6.8 Equipment inspection tagging

Arqiva maintains a comprehensive database to record the structural inspection and maintenance activities on all its masts, towers and rooftop installations. It is not therefore Arqiva's intention to provide labelling, Scafftags or similar, on specific structural elements or equipment or to record the last inspected dates of equipment on structures.

Arqiva structures are inspected for condition and structural integrity on a one, two or three year basis in accordance with BOP309 Inspection and Maintenance of Antenna Support Structures but climbers must remain alert to the possibility of recent damage which might affect climbing safety; and should consider the suitability of members and connections before relying on them for support. All climbing should be conducted in accordance with BOP670 Safe Working at Height – Structures.

6.9 Safe to climb certificates

Whilst some companies who own broadcasting and communications structures have chosen to issue "Safe to Climb Certificates" it is not Arqiva's intention to do likewise. Such certificates can only be accurate at the time of inspection and cannot address unforeseen structural damage, which may occur between inspections due to wind, lightning, ice impact or vandal attacks, and they take no account of possible RF radiation hazards. Arqiva therefore considers them to be misleading, and potentially dangerous. All Arqiva structures are deemed safe to climb provided the climber is trained, experienced and authorised to climb under the Arqiva Site Access Standard.

7 List of Related Documents

Document No:	Document Title:
EI-PY-001	Structural Governance Policy
EI-SD-008	Structure Design Governance Standard
EI-SD-002	Arqiva Site Access Standard
BD-SD-003	Requirements for the Submission of Project information for Approval Standard
BOP630	Requirements for the Design of Single or Multi-user Roof Top Installations
BOP310	Mast and Tower Design and Appraisal Policy
BOP309	Inspection and Maintenance of antenna support structures
BOS010	Generic Specification for the Design, Fabrication and Erection of Masts
BD-TS-001	Guide to the Design and Installation of Antenna and Feeder Support Steelwork
BOW142	SHE Rules
BOW109	SHE Rules for Contractors