

LRQA Independent Assurance Statement

Relating to Northrop Grumman, Incorporated GHG Emissions and Water Inventories for Calendar Year 2019

This Assurance Statement has been prepared for Northrop Grumman, Incorporated in accordance with our contract.

Terms of Engagement

Lloyd's Register Quality Assurance (LRQA) was commissioned by Northrop Grumman, Incorporated (Northrop Grumman) to provide independent assurance on its greenhouse gas (GHG) Emissions and Water Use Inventories ("the Report") for the Calendar Year 2019 against the assurance criteria below to a limited level of assurance using LRQA's verification procedure and ISO 14064 - Part 3 for greenhouse gas data. LRQA's verification procedure is based on current best practise and is in accordance with ISAE 3000 and ISAE 3410.

Our assurance engagement covered Northrop Grumman's operations and activities globally and specifically the following requirements:

- Verifying conformance with:
 - Northrop Grumman's greenNG Reporting Protocol 102a -Greenhouse Gas Inventory Version 2.5
 - Northrop Grumman's greenNG Reporting Protocol 102b -Water Inventory Version 2.1
 - World Resources Institute / World Business Council for Sustainable Development Greenhouse Gas Protocol: A corporate accounting and reporting standard, revised edition (otherwise referred to as the WRI/WBCSD Protocol) for the GHG data¹
- Evaluating the accuracy and reliability of data and information for only the selected indicators listed below:
 - Direct (Scope 1), Energy Indirect (Scope 2) and Other Indirect (Scope 3);
 - Scope 3 GHG emissions verified by LRQA only include the following business travel emissions sources: air travel, rental cars, train travel, and hotel accommodation;
 - Water Use Inventory includes municipal and well water use

Our assurance engagement excluded the data and information from Northrop Grumman's suppliers, contractors and any third-parties mentioned in the report. The following sources were also excluded from the GHG Emissions and Water Use Inventories on the basis of their de minimis contribution and sense-checked during the engagement:

- Scope 1 emissions from non-utility data fuel usage for buildings less than 100,000 square feet;
- Mobile emissions at sites with less than 10 vehicles;
- Process emissions for buildings less than 100,000 square feet;
- Process and fugitive emissions of all HFCs;
- Fugitive emissions from PFCs in fire suppression systems; and
- The Water Use Inventory excludes municipal reclaimed water use and water usage for buildings less than 10,000 square feet.

LRQA's responsibility is only to Northrop Grumman. LRQA disclaims any liability or responsibility to others as explained in the end footnote. Northrop Grumman's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the Report and for maintaining effective internal controls over the systems from which the Report is derived. Ultimately, the Report has been approved by, and remains the responsibility of Northrop Grumman.

¹ <http://www.ghgprotocol.org/>

LRQA's Opinion

Based on LRQA's approach nothing has come to our attention that would cause us to believe that Northrop Grumman has not, in all material respects:

- Met the requirements of the criteria listed above; and
- Disclosed accurate and reliable performance data and information as summarized in Table 1 below.

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of the professional judgement of the verifier.

Note: The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a limited assurance engagement is lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

Table 1. Summary of Northrop Grumman Key Data for Calendar Year 2019:

Scope of GHG emissions	Tonnes CO ₂ e
Scope 1 GHG emissions	145,169
Scope 2 GHG emissions (Location-based)	339,790
Scope 2 GHG emissions (Market-based)	330,247
Scope 3 (business travel)	165,789
Note 1: Scope 2, Location-based and Scope 2, Market-based are defined in the GHG Protocol Scope 2 Guidance, 2015	
Scope of Water Use Inventory	Million gallons
Global Water Use (Municipal and Well Water)	845.00

LRQA's Approach

LRQA's assurance engagements are carried out in accordance with our verification procedure. The following tasks were undertaken as part of the evidence gathering process for this assurance engagement:

- Reviewed an overview of the processes used at the corporate level and by each Northrop Grumman operating sector for the management of data and information related to the Scope 1, Scope 2, and Scope 3 GHG emissions and water use;
- Interviewed relevant staff responsible for managing and maintaining data and information and for preparing the Report at the corporate level;
- Reviewed Northrop Grumman procedures for defining and collecting Scope 1, Scope 2, Scope 3 GHG emissions and water use data;
- Verified the Scope 1, Scope 2 and Scope 3 GHG emissions and water use data for CY 2019 through a review of aggregated level data and information calculation spreadsheets provided by Northrop Grumman; and
- Verified the Scope 2 renewable energy credits (RECs) through review of the REC certificates and verification of the emission calculations.



LRQA's Standards, Competence and Independence

LRQA implements and maintains a comprehensive management system that meets accreditation requirements for ISO 14065 Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition and ISO/IEC 17021 Conformity assessment – Requirements for bodies providing audit and certification of management systems that are at least as demanding as the requirements of the International Standard on Quality Control 1 and comply with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants.

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

Signed

Dated: 14 April 2020

A handwritten signature in blue ink, appearing to read 'Andrea M. Bockrath', written over a light blue horizontal line.

Andrea M. Bockrath
LRQA Lead Verifier
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