

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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In the matter of SpaceX Services Corporation,)
)
) SAT-LOA-20200526-00055; Call sign S3069
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Launch and Operating Authority)
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OPPOSITION TO SPACEX REQUEST FOR AUTHORITY TO CONSTRUCT, DEPLOY AND OPERATE A NEXT GENERATION (GEN2) CONSTELLATION OF NEARLY 30,000 LOW EARTH ORBIT NON-GEOSTATIONARY SATELLITES (NGSO); MOTION TO AWAIT CONCLUSION OF PENDING DIRECTLY INTERTWINED LITIGATION; MOTION FOR CONSULTATION WITH AFFECTED AGENCIES; MOTION FOR DISCLOSURE; MOTION FOR CERTIFICATION OF SUITABLY COMPREHENSIVE INSURANCE COVERAGE; MOTION FOR CERTIFICATION OF INDEMNITY; MOTION TO SUSPEND OR REVOKE LICENSES; AND INCORPORATION OF ENTIRE RECORD IN CASE Nos. 21-1123, -1125, -1128 IN THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

by the BALANCE GROUP

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The elements of this comment on behalf of The BALANCE GROUP¹ include:

1. An opposition to the SpaceX request for authority to construct, deploy and operate a next generation (Gen2) constellation of nearly 30,000 low earth orbit (LEO), non-geostationary satellites *until and if* the predicate environmental, APA, and inter-agency and other reviews described are satisfactorily completed;
2. Motion to await conclusion of pending directly intertwined litigation;
3. Motion for consultation with affected agencies;
4. Motion for disclosure;
5. Motion for certification of suitably comprehensive insurance coverage;
6. Motion for certification of indemnity;
7. Motion to suspend or revoke all related SpaceX deployments during the pendency of these proceedings;
8. Submitting by reference, the entire record in Case Nos. 21-1123, -1125, -1128 in The United States Court of Appeals for the District of Columbia Circuit into this matter.

¹ Individuals and Organizations are members of The BALANCE GROUP. Individual scientists, health care professionals, environmentalists, astronomers, regulatory professionals and others are characteristic of individual members of The BALANCE GROUP. Organizations upon whose behalf this BALANCE GROUP filing is being made include, and are not limited to: Citizens for Health; Broadband International Legal Action Network (BBILAN); Healthy Heavens Trust Initiative (HHTI); Americans for Responsible Technology (ART); International Network for Safe Technology, Environmental Policy & Protection (INSTEPP); Global Network Against Weapons & Nuclear Power in Space (<http://space4peace.org/>); Consumers for Safe Cell Phones; Hawai'i youth outreach 808truth2youth opposing space proliferation of satellites; Ireland for Safe Technology (www.IrelandforSafeTechnology.com); Collectif Stoplinky des Olonnes-France; Belgian action groups against electromagnetic radiation 'Beperk de Straling' (<http://www.beperkdestraling.org/>); 'VEHS' (<https://vehs.be/>); Notre association locale française perignyantilinky5G; Se porte en soutien à votre combat; Collectif stop5G.be (info@stop5G.be); Décroissance-Liège (info@liege.decroissance.be); Collectif STOP-LINKY Montagne de Lure", 04 FRANCE; Association Résistance 5G Nantes (France); 5P (Peace Partners for People, Plants and Planet), Norway; EAW (www.envirosagainstar.org); Cœurs d'EHS (EHS Hearts) (<http://coeursdehs.fr/about-us/>); Life-Environmental Organization, Sapporo, Japan (<https://www.ehs-mcs-jp.com/about-us/>); Manhattan Neighbors for Safer Telecommunications; ElectromagneticHealth.org; Wide Angle Health, LLC; Safe Tech International, (aka Stop 5G International) (www.safetechinternational.org); Massachusetts for Safe Technology (<https://www.ma4safetech.org/>); FACTS (Families Advocating for Chemical and Toxics Safety) (www.FACTStoAction.org); Taos Alliance for Public Health and Safety (www.taosalliance.org); Les Amis de la Terre-Belgique (Friends of the earth Belgium); Collectif ACCAD (Anti Compteurs Communicants Artois-Douais) (<https://collectif-accad.fr>); ASSOCIATION ROBINDES TOITS (<https://www.robindestoits.org>); AREHS asbl (Association for the Recognition of ElectroHyperSensitivity) in Belgium (www.AREHS.be); Les Artistes pour la Paix (www.artistespourlapaix.org); The Peoples Initiative Foundation (<https://thepeoplesinitiative.org/>); Infinite Human Productions (www.infinitehuman.com); Patras Citizens' Committee for the protection of Health from Electromagnetic Radiation; Mouvement politique des objecteurs de croissance; ACTION; Santé | HEA Hippocrate Electrosmog Appeal | Belgique; Face au déploiement massif et inconsidéré des technologies sans fil, nous demandons au gouvernement de faire appliquer le principe de précaution afin de protéger la population et plus particulièrement les groupes les plus vulnérables les femmes enceintes et les enfants. Hippocrate Electrosmog Appeal; Electromagnetic Pollution Illnesses Canada Foundation (EPIC) (www.iexistworld.org); Association Action Citoyenne Environnementale (ACEHendaye); Stop 5G Philippines; ES Ireland (<https://es-ireland.com/>); Coalition to Stop Smart Meters (www.stopsmartmetersbc.com); ATTAC Liège; ATTAC Wallonie Bruxelles; America Against 5G; Pip Reynolds & Pietro Labonia, UK - USA Against 5G; Pip Reynolds & Christopher Cavallero, #HA5G Humanity Against 5G - EMF, Network, Radiation. Heath Concerns; Pip Reynolds & Ely Franklin, Stop 5G Sacramento.

BACKGROUND:

On December 23, 2021, the FCC released a *Public Notice* concerning a SpaceX request for authority to launch and operate a constellation of either of 29,988 satellites at altitudes ranging from 340 km to 614 km, or alternatively, 29,996 satellites at altitudes ranging from 328 km to 614 km.² Originally, comments were due, January 25, 2022. In response to a request for a 30-day extension, the FCC granted a 15-day extension.³

DETAILS:

The record remains open in the separate but now related Space Exploration Holdings, LLC (SpaceX) Major Modification proceeding. That proceeding concerns a satellite mega-constellation network deployment that is at least 200 km further from earth than the network proposed in this proposed Gen2 constellation. The record makes clear that the SpaceX deployment as contemplated in the Major Modification will brighten and alter the night sky, with significant impacts on human health, animal behavior, and astronomical observations. As one study put it, “[e]ven if all mitigations [being discussed] were implemented, astronomy will pay dearly,” especially given that “none of [SpaceX’s mitigation] strategies so far are yet achieving” recommended brightness levels. [Viasat.Reply.Ex.13.at 150, 247]

The currently unresolved SpaceX Major Modification consists mainly of a request by SpaceX to modify its Ku/Ka-band Non-Geostationary Orbiting (NGSO) license to relocate 100 percent of its NGSO satellites currently authorized to “operate at altitudes from 1,110 km to 1,325 km down to altitudes ranging from 540 km to 570 km, and to make related changes.”⁴ That request is the subject of

² FCC Public Notice, Report No. SAT-01598 (Dec. 23, 2021); “Space Exploration Holdings, LLC Space Exploration Holdings, LLC (SpaceX) requests authority to construct, deploy and operate a “next-generation” (Gen2) constellation of low-Earth orbit, non-geostationary satellite orbit satellites for provision of broadband in the fixed-satellite service (FSS). SpaceX seeks to operate the Gen2 constellation in one of two alternative configurations depending on the availability of launch vehicles.

The first configuration consists of 29,988 satellites at altitudes ranging from 340 km to 614 km, and the second consists of 29,996 satellites at altitudes ranging from 328 km to 614 km. SpaceX requests authority to operate in the FSS using the following frequency bands: 10.7-12.7 GHz, 17.8-18.6 GHz, 18.8-19.3 GHz, 19.7-20.2 GHz, and 71.0-76.0 GHz (space-to-Earth); and 12.75-13.25 GHz, 14.0-14.5 GHz, 27.5-29.1 GHz, 29.5-30.0 GHz, and 81.0-86.0 GHz (Earth-to-space). SpaceX also requests authority to conduct telemetry, tracking, and command operations in the 12.15-12.25 GHz (space-to-Earth), 18.55-18.60 GHz (space-to-Earth), and 13.85-14.0 GHz (Earth-to-space) frequency bands. SpaceX seeks authority to conduct telemetry, tracking, and command operations during orbit raising and deorbit maneuvers and payload testing of the Gen2 satellites. Additionally, SpaceX requests waiver of Sections 25.202(g)(1), 25.208(e), and 25.146(a)(1) of the Commission's rules, and to the extent necessary, of various limitations in the Commission's Schedule S software in connection with this request. This public notice is without prejudice to issues raised on the record of this proceeding by Kuiper Systems, LLC.; Viasat, Inc.; EchoStar Satellite Services LLC. and Hughes Network Systems LLC.; SES Americom and O3B Limited; and Eutelsat S.A., regarding the acceptability of the mutually exclusive proposals in SpaceX's application.”

³ FCC Public Notice, Report No. SAT-01601 (Jan. 14, 2022).

⁴ See: APPLICATION FOR MODIFICATION OF AUTHORIZATION FOR THE SPACEX NGSO SATELLITE SYSTEM, SAT-MOD-20200417-000037, Call Signs S2983/3018, (SpaceX Major Modification Application) (dated April 17, 2020), Space Exploration Holdings, LLC.

ongoing litigation whereby The BALANCE GROUP raised substantial technical, environmental, human health, national security, cybersecurity, insurance, inter-agency, industry, international, and other concerns about a SpaceX Major Modification request to place over 4,000 satellites into a radically lower orbit. Other parties also raised concerns. Most, if not all, the concerns in that record remain *unresolved*.⁵

Now, while SpaceX Major Modification matter remains unresolved, the *present Gen2 proposal* is to launch and operate over time nearly 30,000 satellites in locations up to 200 kilometers *closer* to earth.⁶ The BALANCE GROUP opposes any grant of the present proposal until and only if (i) the issues raised in the Major Modification proceeding are resolved, *and* (ii) APA-compliant and National Environmental Protection Act (NEPA)-compliant studies, and inter-agency and treaty assessment consultations and proceedings are conducted concerning the even much larger and much lower altitude Gen2 network proposal.

The BALANCE GROUP's unresolved requests and questions from its May 27, 2020 filing, and subsequent related filings before the FCC and the court, are inextricably intertwined with the present proceeding. The concerns raised there, apply here, both separably and in unison.

OTHER FEDERAL AGENCIES MUST BE CONSULTED AND GIVEN THE TIME TO ADDRESS THEIR STATUTORY RESPONSIBILITIES.

The unprecedented satellite mega-constellation at issue in this Gen2 proceeding raises numerous and profound issues that implicate the statutory responsibility of other federal agencies. Those agencies must be provided the time and resources and due notice and information necessary to conduct their own APA-compliant rulemakings and related research assessments.

Unanswered Questions About Other Federal Agencies Jurisdictions

Have, for example, the Department of Defense and the Department of Homeland Security and the National Aeronautics and Space Administration (NASA) been *formally advised* as to the size and

scope of the proposed network? Have they been requested to provide the FCC with a written opinion as to how the proposed network may invoke elements of their organizations' statutory authority? Unlike many smaller or older satellite networks the proposed mega-constellations are much more *tightly coupled* to their earth-bound systems. Any material disruptions or even minor disruptions to such tightly coupled network elements in space or on the ground can create massive, systemic havoc. Large-scale, systemic and unfortunately successful cyber-security attacks have occurred since the SpaceX Major Modification request went on Public Notice in early 2020, including and not limited to Solar Winds, Microsoft, Colonial Pipeline, and others. Moreover, Russia has subsequently successfully tested anti-satellite missile technology, adding to space debris and direct attack concerns.

“Is Russia’s [recent threat to destroy GPS satellites](#) technically realistic? Specifically, how many satellites would it have to destroy to essentially incapacitate GPS-dependent U.S. weapons systems? Would the 1,100-km separation between the orbits of GPS and GLONASS satellites spare the latter from the debris field?

It appears technically possible because they destroyed one of their own retired Soviet satellites on Nov. 15 with anti-satellite technology. Russia threatened to destroy up to 32 satellites, which would incapacitate GPS-dependent weapons and create a virtual mine field of debris with little ability to project trajectories of debris fallout. It is imperative that LEO and ground-based sensor alternatives be developed that will make an enemy attack less likely to be incapacitating.” — Ellen Hall, Spirent Federal Systems [Source: GPS World, *Russian Threats to GPS*, Feb. 8, 2022, [Editorial Advisory Board Q&A: Russian threats to GPS - GPS World : GPS World](#)]

How vulnerable is this proposed mega-constellation and how reliant will the U.S. and the world be upon its ability to operate safely and securely?

How does SpaceX’s proposed global (international) network impact the responsibilities and jurisdiction of the U.S. State Department?

Have the Environmental Protection Agency (EPA) and Department of Agriculture (USDA) been provided the opportunity to conduct their own research and rulemakings concerning the environmental impact of these proposed mega-constellations? What about the work of the Food and

Drug Administration (FDA), whose jurisdiction includes radiation exposure standards?

⁵ Opposition and Motions of The Balance Group (filed May 26, 2020), as amended by Errata of The Balance Group (filed May 27, 2020) (The Balance Group Opposition); Petition to Deny or Defer of Viasat, Inc. (filed Jul. 13, 2020) (Viasat Petition); Petition to Deny or Defer of SES Americom, Inc. and O3b Limited (filed Jul. 13, 2020) (SES/O3b Petition); Petition to Deny of Kepler Communications, Inc. (filed Jul. 13, 2020) (Kepler Opposition); Petition to Deny and Comments of Kuiper Systems, LLC (filed Jul. 13, 2020) (Kuiper Opposition); Petition Pursuant to Section 1.1307 of Viasat, Inc. (filed Dec. 19, 2020) (Viasat NEPA Petition).

⁶ FCC PUBLIC NOTICE, Report No. SAT-01598 (December 23, 2021).

These inter-agency matters require resolution as a predicate to approving or denying the present SpaceX request.

IS SPACEX INSURED?

Motion for disclosure, Motion for certification of suitably comprehensive insurance coverage, and Motion for certification of indemnity.

Has the FCC disclosed whether the SpaceX network as proposed has been duly insured and indemnified against material and catastrophic impacts to (i) national security, (ii) other networks, (iii) the astronomical sciences, (iv) human health, (v) environmental health, (vi) food production, (vii) real estate values related to night sky disruption, (viii) international treaties, and the other matters discussed in the record? These matters need resolution as a predicate to approving or denying the SpaceX request.

SUSPEND THE MEGA-CONSTELLATION DEPLOYMENTS UNTIL THRESHOLD SYSTEMIC ISSUES ARE UNDERSTOOD AND ADJUDICATED

Motion to suspend or revoke all related SpaceX deployments during the pendency of these proceedings.

SpaceX must not be launching and operating mega-constellations when the suitability of the design and the legal authority for such a network remains in dispute. The present proposal requires a (i) thorough environmental review of the *entire network* as contemplated, (ii) evidence of thorough APA-compliant reviews both at the FCC and at impacted sister federal Agencies and Departments, in addition to due consultation with those agencies, (iii) due review of treaty obligations, and (iv) resolution of the pending related litigation, among numerous other concerns. Therefore, suspend deployments until and if these matters are satisfactorily resolved.

THE RECORD IN THE SPACEX MAJOR MODIFICATION PROCEEDING IS INCORPORATED INTO THIS GEN2 RECORD

Incorporation of the entire FCC and Federal Court Records:

The entire FCC record and court record in the SpaceX Major Modification proceeding is incorporated in full into this present proceeding, as the issues there are also issues here, *both separately*

*and in unison.*⁷

Under 47 CFR, especially but not limited to Parts 1 and 25, and the powers delegated to the International Bureau, it is now apparent that the SpaceX Major Modification application evidences a *prima facie* case requiring that the major modification not move forward, and calling into question the project's core propositional integrity and planning. SpaceX and the International Bureau need to divulge critical and material information missing from the record. Proof that the SpaceX system carries adequate insurance against numerous reasonably foreseeable systemic and catastrophic failures needs to be provided. Proof that the citizens and the government of the United States are indemnified against any material systemic or catastrophic failures caused by the SpaceX system as proposed for modification is necessary. Over a dozen impacted federal agencies must be forthwith contacted and effectively

⁷ Nos. 21-1123, -1125, -1128 IN THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT, VIASAT, INC., Appellant, v. FEDERAL COMMUNICATIONS COMMISSION, Appellee, SPACE EXPLORATION HOLDINGS, LLC, Intervenor for Respondent. THE BALANCE GROUP, Appellant, v. FEDERAL COMMUNICATIONS COMMISSION, Appellee, SPACE EXPLORATION HOLDINGS, LLC, Intervenor for Respondent. On Appeal from the Federal Communications Commission IBFS File No. SAT-MOD-20200417-00037, et al.

consulted with in their impacted areas of expertise and jurisdiction. The SpaceX Major Modification launches must be immediately suspended along, if necessary, with a suspension or revocation of Call Signs S2983 and S3109, until and if baseline, material licensure and operational requirements are certified as satisfied by the appropriate authorities of jurisdiction in a manner keeping with U.S. Law and Treaty Obligations. The same applies to Call Sign S3069 in the present Gen2 matter.

The SpaceX Gen2 network, as planned, is designed as the largest satellite system in the Earth's history, as measured by publicly available records. In fact, if the current authorizations are fully deployed, SpaceX's systems will consist of dramatically more satellites than all the world's currently operational networks (domestic and international) combined.⁸ As such, the regulatory agencies overseeing the potential impacts of approving or assessing the deployment hold a heightened duty of care and vigilance, pursuant to domestically and internationally recognized precautionary principles. The BALANCE GROUP⁹ Comments and the associated Opposition and Motions listed herein are meant to be useful to the Federal Communications Commission, SpaceX, the public, and the public's other representatives in assessing material issues of security, health, safety and welfare, related to approving, funding, insuring, constructing, and operating the proposed network, or similar networks.

Critical information is missing. The missing information includes and is not limited to matters of: national security; environmental impacts; proof that suitable insurance and indemnification exists against a number of material and readily-identifiable systemic and catastrophic harms; evidence that minimally acceptable confirmed coordination, written assessments, and permissions were secured with other federal agencies that have subject matter jurisdiction — not to mention a variety of other requirements on the face of the license.

⁸ The combined SpaceX satellite authorizations permit deployment of 11,927 satellites during the course of their license terms (4,409 satellites through Call Sign S2983/S3018 and 7,518 satellites through Call Sign S2992). Call sign S3069 references nearly 30,000 satellites.

⁹ The BALANCE GROUP is designed to provide counsel and technical systems and solutions to individuals, non-profits, corporations, and governments. Its mission is to ensure that satellite and terrestrial broadband and other radio-frequency transmission networks and technologies are proven, through peer-reviewed science, to not pose a material risk of systemic harm to human beings or the environment both prior to being approved for deployment and also during their operational and post-operational (“space debris”) phases.

This proceeding brings into focus material public interest decisions about whether to approve, fund, construct, and operate the proposed network, or whether to insist on baseline safety reviews and measures important to our national security, our environment, our health, our treaty obligations, the rights and obligations of other federal agencies, and the health of existing networks.

Respectfully submitted,

THE BALANCE GROUP

By:

/s/ Joseph M. Sandri

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February 8, 2022

DECLARATION

Qualifications

Mr. Sandri has over three decades of experience in the telecommunications industry and in environmental matters, in legal and executive roles. His biography is posted on the following sites (in alphabetical order):

Archangel Ancient Tree Archive:

<https://www.ancienttreearchive.org/about-us/our-board/>

National Spectrum Management Association:

<https://nsma.org/about-us/nsma-officers/>

Thought Delivery Systems, Inc.:

<http://www.thoughtdelivery.com/about.html>

I declare under penalty of perjury that the factual statements contained herein are true and correct, to the best of my knowledge.

Executed on February 8, 2022.

/s/ Joseph M. Sandri

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