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

In the Matter of	
Office of Engineering and Technology Announces the Opening of Public Testing for Nominet White Space Database System	ET Docket No. 04-186

REPLY OF NOMINET

Nominet hereby responds to the National Association of Broadcaster's submission relating to Nominet's application to serve as a White Space Database (WSDB) operator and the recently concluded 45-day test period. The test period revealed that the Nominet WSDB service operates as required by both the FCC's rules and the various private technical standards relating to WSDB operation including IETF RFC 7545, Protocol to Access White-Space Databases (PAWS)[1] and the White Space Database Administrator Group's Database-to-Database Synchronization Interoperability Specification.[2]

The testing process had the intended effect of allowing the Commission, interested parties, and Nominet itself to work collaboratively to ensure that the WSDB system is free of errors, respond to minor feature requests, and acquaint interested parties with Nominet's WSDB functionality. As is to be expected, that process revealed a small number of items to be addressed, each of which we have promptly resolved. Nominet's testing process was

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[1] V. Chen et al., *Protocol to Access White-Space (PAWS) Database*, Internet Engineering Task Force, RFC 7545 (last updated Oct. 14, 2015) ("IETF RFC 7545"), https://datatracker.ietf.org/doc/rfc7545/.

[2] White Space Database Administrator Group, *Database-to-Database Synchronization Interoperability Specification* (v. 1.1.1 Apr. 17, 2012) ("WSDB Interface Specification"), https://transition.fcc.gov/bureaus/oet/whitespace/guides/TVWS_Database_Synchronization_InteropSpec_V1.1.1%204-17-12.pdf.

complicated by: the upgrade the FCC has made to the data import process (in the transition from CDBS to LMS for the purpose of White Space data imports); the just-concluded low-power television Special Displacement Window; and the discontinuance of operations of some White Space database providers. Nonetheless, although these changes required certain adjustments to Nominet's WSDB system during the test period, Nominet has addressed each technical issue, including those that NAB has brought to its attention. Nominet will continue to exercise rigorous ongoing oversight of its database, and looks forward to continuing to work with the FCC, NAB, and any other stakeholder towards this important goal.

Specifically, the NAB filing raises three issues: 1) unexpected results after synchronizing with other database providers, 2) lack of an easy-to-use web-based form for registering fixed WSDs, and 3) the apparent omission of a single full-power broadcaster from WSD query results. The first two of these issues do not identify any flaw in Nominet's WSDB operations, and the third identifies—for the first time—an extremely narrow technical issue that has already been corrected relating to data imports from the FCC's LMS database. None suggests any substantial flaw or limitation in the performance of Nominet's WSDB service.

Nominet and NAB interacted repeatedly during the test period. Thus, we are surprised by NAB's filing, which we believe attempts to unfairly portray the WSDB system, and Nominet's WSDB implementation, as flawed and lacking oversight. Some of the concerns NAB raises are issues that it could have but did not raise with us during the test period. Had NAB done so, the issues it raises here could have been quickly addressed as we describe below.

1. Database Synchronization

NAB asserts that:

> [U]ntil NAB identified this issue, Nominet was apparently not exchanging data with other database providers as required in Section 15.715(l) of the Commission's rules. . . . A subsequent review of the Nominet database of fixed devices on August 1 showed 391 devices, or 552 fewer than listed in Google's

database. It is unclear why there is a difference between the two database providers if they are in fact exchanging information.[3]

Nominet's Response:

NAB does not appear to identify any respect in which Nominet's database synchronization is not functioning as anticipated or as required by the FCC's rules.

First, Nominet is aware that it is required to exchange data with other active database operators pursuant to 47 C.F.R. § 15.715(l) and has been working to implement this synchronization process with other providers. It is not the case that Nominet initiated synchronization with Google only at NAB's suggestion. Nominet continues to work with other providers to ensure that they provide accurate and complete information to Nominet through the synchronization process, as required by both the Commission's rules and established technical standards for database-to-database WSDB synchronization.[4]

Second, NAB's claims regarding the content of this synchronized data suggests a misunderstanding of the database synchronization process: under the applicable technical standards for database synchronization, the fact that two WSDBs are exchanging information does not mean that they will eventually include identical sets of information. That is because when, for example, Nominet obtains synchronization data from Google, that data includes only devices registered through Google. It does *not* include data registered through third-party database providers and transferred into the Google database through synchronization. This reduces complexity in the replication process, and prevents situations where an out-of-date version of a registration record could inadvertently be propagated through the WSDB system.[5]

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[3] National Association of Broadcasters, ET Docket No. 04-186, at 3-4 (filed Aug. 16, 2018) ("NAB Submission").

[4] *See, e.g.*, WSDB Interface Specification.

[5] The following hypothetical shows why synchronization discipline is important. Consider a situation involving database operators X, Y, and Z operating without duplication protections. A fixed device is registered through Z, creating the record R1. Operator Y then synchronizes data with Z and obtains a copy of R1. The fixed device registration is then updated in Z, creating record R2, which is to replace R1. Operator X then synchronizes data with Z, obtaining a copy of record R2—the correct, current version of the record. Without additional safeguards, however, Operator X could then synchronize data with Y, and obtain the out-of-date version of the

Thus, the Nominet database contained a subset of fixed device registration data because the Google database includes some records that it obtained by synchronizing with other database providers and which it does not provide through synchronization. Much or all of this data appears to have been provided to Google by the Spectrum Bridge database which has since ceased operation, requiring the use of a separate, customized process to obtain it, as the FCC's rules anticipate.[6] Nominet has since obtained a full export of the data in question and added it to the Nominet database through a process separate from routine database synchronization. The extent of this data matches NAB's stated expectations.

Thus, although Nominet's test process was complicated by the changing status of other WSDB providers, the test period demonstrated that Nominet has properly implemented the technical standards used for synchronizing this data. Nominet will continue to exercise the highest diligence in acquiring and incorporating legacy data.

2. Fixed Device Registration

NAB asserts that: "NAB was unable to locate [a fixed device registration utility] on Nominet's website, and so was unable to test this functionality."[7]

Nominet's Response:

The Nominet test portal clearly states, under the section labeled "How to register a Fixed White Space Device" that "Fixed White Space Devices can be registered using the PAWS interface as used by the devices."[8] In other words, while Nominet has not created a web form for submitting fixed device registrations, interested parties have been able, throughout the test period, to register fixed devices using the well documented PAWS standard with the Nominet

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registration, R1. Even worse, Operator Z could then synchronize with either X or Y, overwriting the correct record R2 with the out-of-date R1, meaning that R1 could fully replace R2 throughout the database system.

[6] *See* 47 C.F.R. § 15.715(j).

[7] NAB Submission at 4.

[8] Nominet, *USA TVWS Protected Entity Registration*, https://usa.dev-wsdb.uk/ (last visited Aug. 23, 2018).

WSDB API.[9] There is no requirement to offer a web form for fixed device registration and, indeed, fixed devices are typically registered using the PAWS API, not through the use of a web form. For this reason, Nominet does not intend to implement a web form for fixed device registration when the system is used in production. Therefore, allowing users to simulate the PAWS-based device registration process would have inappropriately rendered the test process different from the final production system.

We note that no party, including NAB, contacted Nominet to seek assistance with the use of the PAWS API-based registration process. NAB's filing indicates that it communicated with Nominet and was informed that the fixed device registration system was not available for testing. If NAB formed this conclusion on the basis of communications with Nominet staff, it could only have been the result of a misunderstanding or miscommunication. As explained above, the fixed device registration functionality was available through the test period and was clearly explained on the Nominet WSDB test portal.

No party has raised any issue relating to the performance of this feature.

3. Channel Availability Calculations

NAB asserts that it "spot checked a full power television station in Nominet's database" and found a station that was "listed on its old, pre-repacking channel even though it had transitioned to its new channel approximately one month earlier."[10] NAB states that it brought this issue to Nominet's attention but then identified another station that was not listed in the Nominet database. On this basis, NAB suggests that Nominet failed to address the issue that it brought to Nominet's attention during the test period and that there remains an unaddressed issue relating to propagation of broadcasters' updated channel assignments.[11]

Nominet's Response:

The two issues NAB described are unrelated to one another and both have been resolved. The issue that NAB raised during the test period related to the Commission's change from requiring

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[9] IETF RFC 7545.

[10] NAB Submission at 4.

[11] *Id.* at 4-5.

WSDB providers to communicate with its CDBS database to requiring them to obtain data from the separate LMS system. The process of switching from one data source to the other required changes to the Nominet database during the beginning of the test period. Nominet resolved the issue that NAB raised by July 25.

NAB now raises a new item, caused by the unusual facility status listed for the affected station, WGBA-TV. This station appears to be the only station in the Commission's LMS database with this particular facility status code, making this issue unique to a single station. Nonetheless, Nominet was able to resolve this issue within minutes of reviewing NAB's filing, where it was identified for the first time.

The most effective means of completing the WSDB database test and ensuring the accuracy of datasets imported from FCC databases would be for NAB or any other interested stakeholder to inform us of any other stations that, in its view, are not properly included in the database. This would allow any issues to be rapidly identified and corrected all at once, rather than relying on an iterative process of individual successive spot checks. We would be happy to receive such a list from NAB at any time, although we do not expect there to be any remaining stations that have not been properly imported.

Notably, although Nominet is required, and fully expects, to maintain a complete and accurate database of registered devices and licensed users, Nominet must also "[r]espond in a timely manner to verify, correct and/or remove, as appropriate, data in the event that the Commission or a party brings claim of inaccuracies in the database to its attention."[12] Nominet's response to the issues raised by NAB illustrates that Nominet works with the FCC and any interested stakeholder to ensure that the WSDB system is subject to rigorous, ongoing oversight, and that any identified issues are resolved promptly.
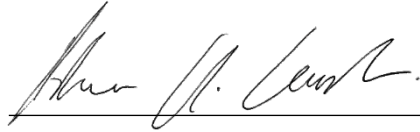
4. Conclusion

Nominet appreciates this opportunity to more fully explain its WSDB service and to address the sole remaining data import issue that any party has identified. We recognize the important role of WSDB operators in protecting incumbent licensees from harmful interference. We

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[12] 47 C.F.R. § 15.715(i).

appreciate the FCC's, NAB's, and other stakeholders' diligence in testing the Nominet WSDB service and we stand ready to work together in the future for the good of all parties and the public.

Respectfully submitted,

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