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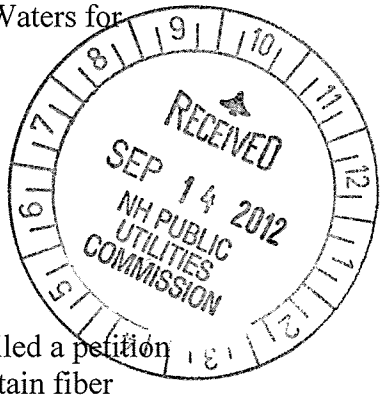
STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: September 12, 2012
AT (OFFICE): NHPUC

FROM: Leszek Stachow, Analyst

SUBJECT: DT 12-111 New Hampshire Optical Systems, Inc.
Petition for Authority to Construct and Maintain Fiber Optic Communications Cable Over and Across Two Different Waters for Segment 3-from Springfield to Concord



TO: Commission
Debra Howland, Executive Director

On April 23, 2012, New Hampshire Optical Systems, Inc. (NHOS) filed a petition pursuant to RSA 371:17 seeking approval for licenses to construct and maintain fiber optic communications cables over and across two public waterways in a section of its cable line that begins in Springfield and ends in Concord. According to NHOS, the project is broken up into 17 segments across the state. The petition here seeks approval for crossings in Segment 3 of its project.

The locations of the crossings in this petition are as follows:

- Warner River in Warner, NH
  - Between Utility Pole E 6/11X, T-8/68 and Pole E-not tagged, T-8/67 (TID 222)
- Contoocook River in Hopkinton, NH
  - Between Utility Pole E-6H/90 , T-1/5 and Pole E-6H/91, T-8/.5 (TID 223)

Each river crossing by the cables in this petition is listed as a public water in the Department of Environmental Services' official list of public waters and therefore requires a license pursuant to RSA 371:17.

1. **Review of public need and public impact.**

In its cover letter NHOS states that it has been contracted to construct and manage the Network New Hampshire Now middle mile fiber network, which will expand the availability of broadband to areas of NH with limited or no internet service. According to NHOS, construction of the fiber is necessary to meet reasonable requirements of service to the public. NHOS states in its petition, that no environmental permits are required of

the crossings. NHOS states that the licenses petitioned for "may be exercised without affecting the rights of the public in the public waters of each river. Minimum safe line clearances above the water surface and affected shorelines will be maintained at all times. The use and enjoyment by the public of each waterway will not be diminished in any material respect as a result of the overhead line crossing."

2. **Review of NESC code requirements.**

According to the petition the crossings will be designed, constructed, maintained and operated according to the National Electrical Safety Code (NESC). Staff reviewed documents and data provided by NHOS, including detailed diagrams, descriptions, and maps of the crossings. Staff confirmed the information provided in the filing complies with the requirements of the NESC. The attached worksheets summarize Staff's review.

As noted on the worksheets, however, the information provided by NHOS did not verify a minimum clearance of 75 percent of the distance required at the supports at every point in the span (30 inches between electric neutral and the proposed attachment) required by NESC 235C2b, or a minimum 4 inch clearance between the proposed attachment and any conductor, cable or equipment of adjacent communications attachments at every point in the span required by NESC 235H. As these particular requirements of the NESC are not likely to affect the public rights in the waterway, rather than deny the license Staff recommends these requirements be made conditions of the license to ensure there will be no adverse impact on adjacent utility facilities.

Additionally, Staff was unable to confirm whether other utility crossings at these locations are licensed and also comply with the NESC. To the extent other utilities or pole owners with attachments beneath the NHOS attachments seek a license in the future and it is discovered that those attachments do not meet NESC requirements, NHOS may be required to rearrange its attachments. To avoid further delay of the requested licenses, Staff recommends these NHOS crossings be licensed on the condition that if future requests for license of existing facilities at these crossings require rearrangement to ensure all pole attachments on these poles comply with the NESC and state law, NHOS will cooperate fully with the pole owners and rearrange its attachments at NHOS' expense.

3. **Recommendations and Conclusions.**

Based upon Staff's analysis, the proposed crossings will not substantially affect the public rights in the waters and lands and Staff concludes that NHOS has demonstrated a public need for the proposed crossings. Accordingly, Staff recommends that the Commission grant the licenses for the NHOS segment 3 crossings in this petition, with the following conditions;

1. NHOS will cooperate fully with pole owners and rearrange these attachments at NHOS' expense if future requests for license of existing attachments beneath

NHOS attachments at these crossings require rearrangements to ensure that all pole attachments on these poles comply with the NESC and state law.

2. NHOS maintain proper clearances between its cables and those adjacent to it at all times across the entire span pursuant to NESC 235C2b and 235H.

3. NHOS construct, operate and maintain the attachments at all times in accordance with both the 2002 and 2007 editions of the NESC as required by NH Admin. Code Puc 433.01 and 1303.07.

Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.

Telecommunications Fiber Optic Cable[1] Water Crossing Checklist

Docket #: DT 12-111

Applicant: NHOS

Date: August 31, 2012

Analyst: Stachow

Location: Warner River, Warner, NH; TID 222;
E 6/11X-T-8/68;E-NT-T-8/67

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1	Yes	Is water body on DES list: http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf
2	N/A	If Merrimack River from the MA-NH State line to Concord, NH; Lake Umbagog within NH; or the Connecticut River to Pittsburg, NH., has Army Corps of Engineers approved?
3	Not needed	Does petition indicate DOT or DES approvals needed?
4	N/A	If DOT or DES approvals needed, ask applicant for contact at applicable state agency and call to determine status of approvals. Are DOT or DES approvals expected?
5	Yes	Compare facts stated in petition to "as built" drawings. Are facts consistent? Check things like pole numbers, span length, location, water body.
6	Yes	Compare make ready requirements from pole owner to "as built" drawing. Confirm necessary appurtenances (e.g. guys) are included in drawing and all existing attachments are depicted.
7	Yes	Does petition attest the proposed crossing is designed and will be built and maintained in accordance with the NESC?
8	Unknown	Are existing attachments licensed? If not, notify existing attachers in writing and request license application.

[1]As defined by NESC 230 F 1e and NESC 230 F 2

9	Yes	If lowest attachment is not licensed, verify minimum water clearances plus one foot per attachment beneath proposed attachment are met under Heavy Load conditions and recommend conditional approval. (e.g if water is not suitable for sailing and there are 2 existing attachments below proposed, add 2 feet to 14 foot clearance requirement and determine if proposed attachment with maximum sag is greater than 16 feet).
10	Unknown	If lowest attachment is licensed, does make ready indicate lowest attachment will be moved closer to water? (If no, skip to step 15. If yes, what is max sag of lowest attachment at 0 deg F, 0.5 inch ice, 4 psf wind?)
11	No	Is water suitable for sailing?
12	Unknown	If not suitable for sailing is there **14 feet** clearance from lowest point in sag of lowest attachment to water surface under heavy load conditions? (preferably measured from water surface at 10 year flood elevation, but not required) NESC Table 232-1, 6
13	N/A	If suitable for sailing is there appropriate clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions at 10 year flood elevation. Size of rivers and streams based upon largest surface area of any 1 mile segment that includes the crossing (circle applicable standard) a. Less than 20 acres: **17.5 feet** b. Over 20 to 200 acres: **25.5 feet** c. Over 200 to 2000 acres: **31.5 feet** d. Over 2000 acres: **37.5 feet** NESC Table 232-1, 7 and notes 18 and 19.
14	Yes	Is there a minimum of **40 inches** between electric neutral and proposed attachment on each pole? NESC Table 235-5 1a
15	Unknown	Is there a minimum 75% of distance required at supports at every point in the span (**30 inches** between electric neutral and proposed attachment) under all conditions? NESC 235C2b
16	4.87	What is maximum sag of proposed attachment under Heavy Load Conditions? NESC Table 250-1

17	Correct	Run tension numbers to verify maximum sag calculation.
18	Yes	Is there a minimum **12 inch** clearance between proposed attachment and adjacent communications attachments at each pole? NESC 235H1
19	Unknown	Is there a minimum **4 inch** clearance between proposed attachment and any conductor, cable or equipment of adjacent communications attachments at every point in the span under Heavy Load conditions? NESC 235H2

NOTE: If the crossing is within 10 feet horizontally of an existing bridge structure that may already limit use of the waterway, a simplified drawing may be submitted with vertical distances measured to the bridge deck. If bridge deck is 15 feet above water surface, water is not suitable for sailing, and height of lowest crossing is above the bridge deck, clearance to water does not need to be measured. In this instance, flood elevation information is not required.

NOTES:

#15. No data furnished
#19. No data furnished

Info provided is intended to be used in conjunction with the NESC and does not in any way supersede or replace the NESC. The NESC should always be considered as the primary basis for making clearance determinations.

Telecommunications Fiber Optic Cable[1] Water Crossing Checklist

Docket #: DT 12-111

Applicant: NHOS

Date: August 31, 2012

Analyst: Stachow

Location: Contoocook River, Hopkington, NH; TID 223;
E 6H/90-T-1/5;E 6H/91-T-8/.5

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1	Yes	Is water body on DES list: http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/olpw.pdf
2	N/A	If Merrimack River from the MA-NH State line to Concord, NH; Lake Umbagog within NH; or the Connecticut River to Pittsburg, NH., has Army Corps of Engineers approved?
3	Not needed	Does petition indicate DOT or DES approvals needed?
4	N/A	If DOT or DES approvals needed, ask applicant for contact at applicable state agency and call to determine status of approvals. Are DOT or DES approvals expected?
5	Yes	Compare facts stated in petition to "as built" drawings. Are facts consistent? Check things like pole numbers, span length, location, water body.
6	Yes	Compare make ready requirements from pole owner to "as built" drawing. Confirm necessary appurtenances (e.g. guys) are included in drawing and all existing attachments are depicted.
7	Yes	Does petition attest the proposed crossing is designed and will be built and maintained in accordance with the NESC?
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9	Yes	If lowest attachment is not licensed, verify minimum water clearances plus one foot per attachment beneath proposed attachment are met under Heavy Load conditions and recommend conditional approval. (e.g if water is not suitable for sailing and there are 2 existing attachments below proposed, add 2 feet to 14 foot clearance requirement and determine if proposed attachment with maximum sag is greater than 16 feet).
10	Unknown	If lowest attachment is licensed, does make ready indicate lowest attachment will be moved closer to water? (If no, skip to step 15. If yes, what is max sag of lowest attachment at 0 deg F, 0.5 inch ice, 4 psf wind?)
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13	N/A	If suitable for sailing is there appropriate clearance from lowest point in sag of lowest attachment to water surface under Heavy Load conditions at 10 year flood elevation. Size of rivers and streams based upon largest surface area of any 1 mile segment that includes the crossing (circle applicable standard) a. Less than 20 acres: **17.5 feet** b. Over 20 to 200 acres: **25.5 feet** c. Over 200 to 2000 acres: **31.5 feet** d. Over 2000 acres: **37.5 feet** NESC Table 232-1, 7 and notes 18 and 19.
14	Yes	Is there a minimum of **40 inches** between electric neutral and proposed attachment on each pole? NESC Table 235-5 1a
15	Unknown	Is there a minimum 75% of distance required at supports at every point in the span (**30 inches** between electric neutral and proposed attachment) under all conditions? NESC 235C2b
16	3.66	What is maximum sag of proposed attachment under Heavy Load Conditions? NESC Table 250-1

17	Correct	Run tension numbers to verify maximum sag calculation.
18	Yes	Is there a minimum **12 inch** clearance between proposed attachment and adjacent communications attachments at each pole? NESC 235H1
19	Unknown	Is there a minimum **4 inch** clearance between proposed attachment and any conductor, cable or equipment of adjacent communications attachments at every point in the span under Heavy Load conditions? NESC 235H2

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