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Amended Written Direct Testimony of Richard Nees

I. Education, Experience, and Qualifications

I am a Senior Archaeologist with Pacific Consulting Services, Inc. (“PCSI”) where I have worked since 2003. I received a B.A. degree from Arizona State University in 1988 and have worked as an archaeologist in Hawai‘i for the past 28 years. I have actively participated in archaeological field work contracted by the Office of Mauna Kea Management (“OMKM”) to PCSI since 2005, and have co-authored numerous archeological inventory survey reports for Mauna Kea. I was the Field Director or Field Supervisor for archaeological inventory surveys by PCSI in the Mauna Kea Science Reserve (“MKSR”), the Mauna Kea Access Road Corridor, and Hale Pōhaku, as well as the archaeological survey of the Mauna Kea Ice Age Natural Area Reserve to the south of the MKSR. Since 2011, I have led annual monitoring inspections of the historic properties identified within the lease lands held by the University of Hawai‘i on Mauna Kea. A copy of my curriculum vitae is provided as Exhibit A-119 in this proceeding.

II. Cultural Resources

A. Documentation of Cultural Resources

Since 2005, PCSI has conducted archaeological inventory surveys (“AIS”) on and adjacent to the MKSR, the lands leased to the University of Hawai‘i by the State. Final reports for the following areas have been completed and approved by the SHPD:

McCoy, Patrick C., Richard Nees & Stephan D. Clark. 2010. *FINAL REPORT. Archaeological Inventory Survey of the Astronomy Precinct In the Mauna Kea Science Reserve Ka‘ohe Ahupua‘a, Hāmākua District, Island of Hawai‘i TMK: (3) 4-4-015: 09 (por.)*. (Exhibit A-55).

McCoy, Patrick C., Richard Nees & Melanie Mintmier. February 2010. *FINAL REPORT. Archaeological Inventory Survey of the Mauna Kea Access Road Management Corridor, Ka‘ohe Ahupua‘a, Hāmākua District, Island of Hawai‘i*. (Exhibit A-56).

McCoy, Patrick C. & Richard Nees. January 2010. *FINAL REPORT. Archaeological Inventory Survey of the Mauna Kea Science Reserve, Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i, TMK: (3)4-4-015:009 (por.)*. (Appendix I to the TMT Final Environmental Impact Statement (“EIS”), Exhibit A-5, Appendix I).

McCoy, Patrick C. & Richard C. Nees. August 2013. *FINAL REPORT. Archaeological Inventory Survey of the Mauna Kea Ice Age Natural Area Reserve Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i*. (Exhibit A-122).

In addition to the above reports, PCSI also prepared a Cultural Resources Management Plan (“CRMP”) to be implemented by the OMKM for lands under the University’s jurisdiction:

McCoy, Patrick C., Sara Collins, Stephan D. Clark & Valerie Park. 2009. *A Cultural Resource Management Plan for the University of Hawai'i Management Areas on Mauna Kea, Ka'ohē Ahupua'a, Hāmākua District, Island of Hawai'i. TMK: (3) 4-4-012, 015. A Sub-Plan for the Mauna Kea Comprehensive Management Plan*. (Exhibit A-11).

The Board of Land and Natural Resources (“BLNR”) accepted the CRMP in 2010 as a Sub-Plan to the Comprehensive Management Plan (“CMP”) for Mauna Kea. Exhibit A-9. The CRMP provides recommendations for the management of historic properties and cultural resources documented on the lands under the University’s control.

B. Cultural Resources Within the Project Area

With regard to the Thirty Meter Telescope (“TMT”) Observatory Project, the TMT Observatory site, the Access Way, and the Batch Plant Staging Area are all within the Mauna Kea Summit Region Historic District – Statewide Inventory of Historic Places (“SIHP”) No. 50-10-23-26869 – as previously defined in the SHPD’s Mauna Kea Historic Preservation Plan Management Components (SHPD 2000). (Appendix F to the Mauna Kea Master Plan, Exhibit A-48). The District includes a concentration of significant historic properties that are linked through their setting, historic use, traditional associations, and ongoing cultural practices. The properties include shrines, adze quarry complexes and workshops, burials, stone markers/memorials, temporary shelters, historic campsites, traditional cultural properties

("TCPs"), a historic trail, and sites of unknown function. All of these types of historic sites are contributing properties to the Historic District. Exhibit A-5, Appendix I (McCoy & Nees 2010, pp 7-1 – 7-3). The Historic District has been determined by the SHPD to be significant under all five criteria (A, B, C, D and E), as defined in HAR § 13-275-6.

The TCPs that are contributing properties to the Mauna Kea Summit Region Historic District include Pu‘u Kūkahau‘ula, Pu‘u Waiau (which encloses Lake Waiau), and Pu‘u Līlīnoe. Specific information on these historic properties includes the following:

- Pu‘u Kūkahau‘ula (SIHP No. -21438) encompasses the three *pu‘u* that form the highest portion of Mauna Kea’s summit, Pu‘u Hau‘oki, Pu‘u Kea, and Pu‘u Wekiu, all three of which are recent geographic names for these landmarks. Established by the SHPD in 1999 as TCP, Pu‘u Kūkahau‘ula bears the name of a legendary figure that appears in Hawaiian traditions and is particularly associated, by name, with legends about Mauna Kea. Kūkahau‘ula variously appears as the husband of Līlīnoe, a suitor or husband of Poli‘ahu, and as an *‘aumakua* of fishermen. Exhibit A-55 (McCoy, Nees & Clark 2010: pp 5-15 – 5-20). The Access Way leading to the TMT Observatory would intersect the northwestern edge of Pu‘u Kūkahau‘ula for approximately 800 feet.
- SHPD designated Pu‘u Līlīnoe as SIHP No. -21439; at the same time, SHPD designated Lake Waiau and the adjacent Pu‘u Waiau as the Waiau Site (SIHP No. -21440). The Waiau Site is located outside the MKSR to the south and actually lies within the Mauna Kea Ice Age Natural Area Reserve while Pu‘u Līlīnoe is within the MKSR, southeast of Pu‘u Kūkahau‘ula. No portion of the current project area is in or near Pu‘u Līlīnoe or the Waiau Site.

In addition to the foregoing TCPs, Pu‘u Poli‘ahu is a summit cone to the immediate southwest of the Astronomy Precinct. Poli‘ahu is a goddess who plays a prominent role in many Hawaiian traditions pertaining to Mauna Kea. Poli‘ahu was variously associated with a trail, spring, pond, and cave in the earliest available sources, but it wasn’t until the 1890s when W.D. Alexander proposed giving her name to a *pu‘u* in the summit region. Exhibit A-5, Appendix I (McCoy & Nees 2010, p 5-18). No portion of the current project is located on Pu‘u Poli‘ahu.

Several archaeological sites recorded during recent surveys are known to be present in the vicinity of portions of the current project area. The following sites are known to be in the

vicinity of the Access Way and TMT Observatory Site:

- SIHP No. -16172 was recorded as a shrine and consisted of a single upright with several support stones. Exhibit A-5, Appendix I (McCoy & Nees 2010, p 5-13). First recorded in the early 1980s and subsequently documented during surveys conducted in 1995 and 2005. A Bishop Museum entomologist also reported seeing a crude C-shaped structure and other walls in the vicinity in 1982, however the walls were never observed during archaeological surveys conducted in 1995 or 2005. SIHP No. -16172 is located about 225 feet north of the proposed Observatory site.
- SIHP No. -16167 was recorded as a shrine in 1982 and subsequently documented during surveys conducted in 1995, 1999, and 2007. The site consisted of two uprights placed in a bedrock crack. Exhibit A-5, Appendix I (McCoy & Nees 2010, pp 5-9 – 5-10). SIHP No. -16167 is located approximately 500 feet east of the proposed Access Road, and about 1,300 feet southeast of the proposed TMT Observatory site.
- SIHP No. -16166 was recorded as a multi-feature shrine with eight, possibly nine, uprights arranged in two groups. Exhibit A-5, Appendix I (McCoy & Nees 2010, pp 5-6 – 5-9). First recorded in 1982, the shrine underwent further documentation during survey work in 1995, 1999, and 2005. SIHP No. -16166 is approximately 350 feet east of the Access Road and 1,600 feet southeast of the proposed TMT Observatory site.
- SIHP NO. -21449 was believed to be a single terrace constructed of stacked cobbles and small boulders with a surface composed of cobbles, small boulders, and thin flat slabs which were probably brought to the locale by human agency. Test excavations did not yield cultural materials or features and the site's function is unknown. Exhibit A-5, Appendix I (McCoy & Nees 2010, p 5-15). SIHP No. -21449 is located approximately 200 feet east of the Access Road and 700 feet south of the proposed TMT Observatory site.

The Batch Plant Staging Area is adjacent to the southwestern boundary of Pu'ū Kūkahau'ula (SIHP No. -21438), across the Mauna Kea Access Road. No historic properties are known to be within this area. Prior survey work recorded two shrines in the general region of the Batch Plant Staging Area, both of which are more than 500 feet to the west:

- SIHP No. -16164 is a shrine composed of two upright features. Feature 1 consists of three (possibly five) upright stones that are positioned along the edges of a low rectangular platform; Feature 2 consists of a single upright placed in a bedrock crack, supported by several cobbles. Exhibit A-5, Appendix I (McCoy & Nees 2010, p 3-9). First recorded in 1997, the site was subsequently visited in 2007 and found unchanged.
- SIHP No. -16165 consists of two single uprights about 1.4 meters apart along a ridge; each upright is supported by cobbles. Exhibit A-5, Appendix I (McCoy & Nees

2010, p 3-9). The site was first recorded in 1997 and found unchanged in 2007.

Several features of the Pu‘u Kalepeamoia Site Complex (SIHP No. 50-10-23-16244) are in the general vicinity of HELCO’s Hale Pōhaku Substation; the following site information is drawn from McCoy & Nees, 2010, p 3-13. Exhibit A-5, Appendix I. Two lithic scatters were designated as SIHP Nos. 50-10-23-10310 and -10311. These sites eventually underwent archaeological data recovery after increased erosion made preservation difficult. The data recovery fieldwork demonstrated the presence of both lithic workshops and manufacturing areas for octopus lure sinkers. In addition to the lithic scatters, two shrines are located across the four-wheel drive access road and to the south about 190 feet away from Hale Pōhaku. SIHP No. -10313 is a shrine with three to five upright stones, and SIHP No. -10315 is a single upright shrine. The shrines and lithic scatters are over 1,200 feet from the HELCO substation and from the nearest electrical pull box that will be accessed when the conductors in the existing conduits are replaced. None of the actions required to implement the proposed project will affect these historic properties.

Only one known archaeological site is present near HELCO’s Hale Pōhaku Substation, where transformer swaps will occur. SIHP No. -10320 (also part of the Pu‘u Kalepeamoia Site Complex) is a lithic scatter that lies about 200 feet west of the existing substation. None of the potential TMT activities in this area will be carried out near this site.

In addition to these archaeological sites, the original buildings of Hale Pōhaku – the “stone cabins” – are historic in age. Two rest houses date to the 1930s and were constructed by participants in the Civilian Conservation Corps; one comfort station dates to 1950. Exhibit A-123 (Park & Walden 2010). They are over a thousand feet from the work that would be done within the existing HELCO Hale Pōhaku Substation, and will not be used or otherwise affected

by the subject Project.

III. Protection of Cultural Resources and Mitigation Measures

It is my opinion that the mitigation measures proposed for the TMT, as more fully outlined in Appendices A (Historic Preservation Mitigation Plan) and C (Historical & Archaeological Site Plan) of the TMT Management Plan (Appendix B of the TMT Conservation District Use Application), will prevent substantial adverse impact to existing and identified historic and cultural resources within the surrounding area, community or region. See Exhibit A-

1. Below is a brief description of some of the direct and indirect mitigation measures that will be implemented.

1. Archaeological Monitoring Plan: As detailed in Appendix A to the TMT Management Plan, an Archaeological Monitoring Plan will be prepared and submitted to SHPD for review and approval.
2. Cultural Monitoring: In accordance with the CMP and with the commitments described in the TMT Final EIS, the TMT Project will hire a cultural resource specialist to work in conjunction with the archaeological monitor at all times and in all places or situations where on-site archaeological monitoring is required.
3. TMT Project Design: The TMT Observatory and Access Way have been designed to minimize their potential impacts on cultural resources. The observatory structure is sited in a portion of the Northern Plateau that is more than 200 feet from known historic properties. In addition, the visual effect of the observatory, including its visual impact from areas of cultural importance such as the summit of Kūkahau`ula, has been minimized through design steps such as reducing its size, finishing the support building and fixed structure exterior with a lava color, and finishing the dome with a reflective aluminum-like surface similar to that on the Subaru Observatory. Furthermore, the Access Way will be limited to a single-lane road (from a previous design of two lanes) and follows an existing single-lane, 4-wheel drive road that was previously disturbed for access and testing of the 13N site in the 1960s. This proposed design omits the retaining wall that was required for the similar "Option 3" route described in the Draft EIS. The portion of the Access Way within the boundaries of Kūkahau`ula will be paved to reduce dust. Additionally, the pavement and guardrail will be a reddish color that blends with the surrounding area.
4. Noise: TMT will meet with OMKM and the Kahu Kū Mauna council to identify cultural events that would be sensitive to construction noise in the vicinity of the TMT Observatory site. On up to four days per year, to be identified by Kahu Kū Mauna, the

Project will endeavor to reduce construction noise and activities in the vicinity of cultural practices. During the operational phase, TMT Observatory operations will be reduced to minimize daytime activities on up to four days in observance of Native Hawaiian cultural practices.

5. Restoration of Batch Plant and Pu‘u Poli‘ahu: A portion of the Batch Plant Staging Area will be restored to a more natural condition upon completion of TMT construction. TMT will also fund restoration of the closed access road on Pu‘u Poli‘ahu to its natural state.
6. Construction Best Management Practices: Construction best management practices (“BMPs”) will also be implemented to avoid potential disturbance of land beyond the planned limits of disturbance.
7. HELCO Pull-Boxes: Existing HELCO pull-boxes and other utility boxes that are visually distracting or intrusive at the summit and other key locations visible from other portions of Kūkahau‘ula will be camouflaged by treating them so as to blend into the natural environment to the extent feasible.
8. Cultural and Natural Resources Training Program: TMT will implement a Cultural and Natural Resources Training Program that will require all construction managers, contractors, supervisors, construction workers and TMT staff to be trained annually regarding the potential impact to cultural and archaeological resources and the measures to prevent such impact.
9. Community Benefits Package: TMT commits to fund a Community Benefits Package (“CBP”) of \$1 million per year, to be administered via The Hawai‘i Island New Knowledge (“THINK”) Fund Board of Advisors. THINK Fund purposes could include scholarships and mini-grants, educational programs, college awards, educational programs specific to: Hawaiian Culture, astronomy, math, and science, and community outreach activities.
10. Community Outreach: TMT will outreach to the community including consulting with the Kahu Kū Mauna council regularly regarding cultural impact issues. The TMT outreach office will also have an open door policy with the Native Hawaiian community to discuss various issues that may arise. TMT will support, financially and through use of its outreach office, the following measures related to cultural resources:
 - Hosting an annual cultural event or training. Examples of how this measure will be implemented include activities such as a star-gazing program at the annual Makahiki festival, workshops on stone adze-making, and workshops on how to recognize archaeological sites and to determine their importance.
 - The translation of chants and mele and the use of their teachings; the focus will include both (a) translation, and (b) developing programs that can be used in schools to spread what is learned about Hawaiian science and genealogy.
 - The translation of modern astronomy lessons into Hawaiian language for use at Hawaiian language charter schools.

- Development of exhibits regarding cultural, natural, and historic resources in coordination with OMKM and 'Imiloa that could be used at the Mauna Kea Visitor Information Station, 'Imiloa, TMT facilities, or other appropriate locations. Exhibits will include informational materials that explore the connection between Hawaiian culture and astronomy.

11. Ride Sharing: TMT will implement a Ride-Sharing Program to reduce the number of vehicle trips between Hale Pōhaku and the TMT Observatory. This step could further reduce the Project's impact to the spiritual and sacred quality of Mauna Kea by reducing dust, transient noise, and general movements in the summit region.

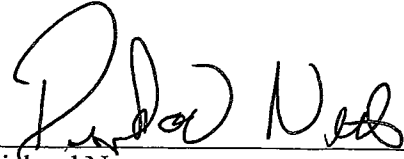
The mitigation measures for addressing any effects on cultural practices that have been developed for the TMT are consistent with those stipulated in the CRMP and CMP. In addition to implementation of mitigation measures specific to the TMT, management actions pertaining to historic preservation and cultural resources that are contained in the CMP and the CRMP will contribute to the protection of these resources.

IV. Compliance with HRS § 6E

I believe that the AIS fieldwork was carried out in accordance with prevailing professional standards. I can further testify that all of the AIS reports have been prepared in compliance with HRS § 6E and its' implementing regulations at HAR 13-275 through 13-282. The SHPD and DLNR have reviewed all reports and plans, concurred with their findings and recommendations, and approved them as final.

[Remainder of page intentionally left blank. Signature page follows.]

DATED: Hilo, Hawai'i, December 5, 2016.

A handwritten signature in black ink, appearing to read "Richard Nees", written over a horizontal line.

Richard Nees
Senior Archaeologist, Pacific
Consulting Services, Inc.

BOARD OF LAND AND NATURAL RESOURCES

STATE OF HAWAII

IN THE MATTER OF

Contested Case Hearing Re Conservation
District Use Application (CDUA) HA-3568 for
the Thirty Meter Telescope at the Mauna Kea
Science Reserve, Ka'ohē Mauka, Hāmākua,
Hawai'i, TMK (3) 4-4-015:009

Case No. BLNR-CC-16-002

CERTIFICATE OF SERVICE

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The undersigned certifies that the *Amended Written Direct Testimony of Richard Nees*
was served upon the following parties by email unless indicated otherwise:

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