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Interactive comment on “The diverse crustal structure and magmatic evolution of the Manihiki Plateau, central Pacific” by K. Hochmuth et al.

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General Comments:

Defining the crustal structure of the Manihiki Plateau for the first time is a major achievement and a most welcome contribution to the literature. The wide-angle seismic data are of high quality, and delineation of the crustal structure appears to be robust. However, the manuscript in current form does not do justice to the quality of the data and rigor of producing the crustal structure models. Most of the conclusions, for example, are either untrue or quite speculative. Instead of the primary focus being speculations on what the new data tell us about magmatism and tectonics, without taking more solid, often contradictory evidence into consideration, the authors should re-focus the paper on what the new data illuminate about salient LIP issues, eg, what is the nature of the

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HVZ, moving forward where Ridley & Richards (2010) left off regarding LIP petrogenesis, etc. Shear wave data and Poisson's ratios are relatively rare for oceanic LIPs, and much, much more could be done with them in a revised manuscript. I recommend major revision and another round of peer review for this manuscript.

Specific Comments / Technical Corrections, page-by-page

Page 1864 Line 2: Replace "It was" with "It is proposed to have been". While evidence for the Manihiki-Hikurangi reconstruction appears robust, this is not the case for the Manihiki-Ontong Java reconstruction. Line 3: Replace "experienced fragmentation" with "deformed internally," and "sub-plateaus" with "sub-provinces," consistent with the terminology of Winterer et al (1974). This makes clear the distinction between the proposed "fragmentation" of Manihiki, Hikurangi, and Ontong Java and, in contrast, the relatively minor deformation within Manihiki. Line 8: Replace "sub-plateaus" with "sub-provinces," consistent with the terminology of Winterer et al (1974). Lines 13-14: The latest (V23) satellite-derived gravity field available from Scripps shows numerous highs indicating seamounts/sea knolls surmounting the Western Plateaus, a few of which have been sampled and dated (Hoernle et al, AGU abstract, 2009) as younger than ca 120 Ma. Thus, while along the two seismic profiles, the High Plateau and Western Plateaus may appear to differ with respect to secondary volcanism, overall both are surmounted by numerous seamounts/sea knolls. Hence, this conclusion is not supported by satellite gravity/bathymetric data. Lines 15-16: The decrease in depth to Moho has at least two plausible explanations: 1) crustal thinning, and 2) original thickness. In the absence of well-imaged normal faulting, the simpler explanation is that Manihiki Plateau crust thins towards its edges. Lines 16-21: On the basis of the above, these conclusions don't appear to be substantiated by the data, and the authors need to re-think their major conclusions. Line 17: Replace "sub-plateaus" with "sub-provinces," consistent with the terminology of Winterer et al (1974). Line 20: Replace "sub-plateaus" with "sub-provinces," consistent with the terminology of Winterer et al (1974). Line 24: LIPs were first defined by Coffin & Eldholm (1994); primary references

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should be employed.

Page 1865 Lines 1-2, 3-4, 5-6, 8-9, 13-14, 16, 17-19: References appear to be listed alphabetically; they should be listed chronologically. Again, primary references should be employed, eg, Coffin & Eldholm (1994), on the basis of work published previously (see references therein), described correlations between LIPs and extinctions events prior to any of the cited references. Line 6: LIPs result in anomalously thick mafic (not oceanic) crust, and again, primary references should be cited. Lines 11-14: The two salient differences between LIPs and normal oceanic lithosphere are the 7.0-7.6 km/s lower crust and the greater crustal thickness. Primary references should be cited (eg, Coffin and Eldholm, 1994, should replace Coffin et al., 2006). Lines 19-21: This conclusion doesn't belong in the introduction, unless previous work is cited. It's not clear what is 'atypical' – different parts of Kerguelen and Ontong Java, for example, show different crustal characters, so why is Manihiki 'atypical'? Lines 22, 24: Replace "sub-plateaus" with "sub-provinces" and "Island" with "Islands," consistent with the terminology of Winterer et al (1974). Line 25: Replace "The fragmentation" with "Internal deformation." Lines 25-27: In current form, this sentence is ambiguous. Do the authors seek to understand how internal deformation (including formation of the Danger Islands Troughs) of Manihiki was related to breakup of Ontong Java Nui, or simply to understand the internal deformation of Manihiki? Replace "Island" with "Islands," consistent with the terminology of Winterer et al (1974).

Page 1866 Line 1: Replace "sub-plateaus" with "sub-provinces," consistent with the terminology of Winterer et al (1974). Lines 4-5: References should be cited for the age of Manihiki formation. Lines 6-7: The 0.8% figure does not refer to Ontong Java Nui, but rather to Ontong Java plus Nauru Basin plus East Mariana Basin plus Pigafetta Basin. The authors should recalculate, adding Manihiki and Hikurangi to these. Also, references appear to be listed alphabetically; they should be listed chronologically. Line 14: A reference for secondary Ontong Java volcanism needs to be cited. Lines 21-22: Replace "Cretaceous Magnetic Quiet Period" with its proper name, "Cretaceous

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Normal Superchron.” Line 25: As above, replace “experienced fragmentation” with “deformed internally.” Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Line 27: Replace “Island” with “Islands,” as named by Winterer et al (1974).

Page 1867 Line 1: Replace “are a failed rift separating” with “separate,” as neither Clague (1976) nor Winterer et al (1974) identified the Danger Islands Troughs uniquely as rifts. Winterer et al (1974) raised the possibility of either extension or transform motion to account for the Troughs. Line 2: Replace “Clague, 1976” with “Winterer et al., 1974,” which is the primary reference. Replace “Suvorov” with “Suvarov,” the spelling used by Winterer et al (1974). Replace “Through” with “Trough.” Lines 11-13, 22-23, 24: References appear to be listed alphabetically; they should be listed chronologically. Line 17: Replace “Island” with “Islands,” as named by Winterer et al (1974). Lines 21-23: Reword this sentence to “Later stages of episodic volcanism on the Manihiki Plateau are also manifested by multiple seamounts on the High Plateau (Coulbourn and Hill, 1991; Beiersdorf et al., 1995b) and Western Plateaus (Smith and Sandwell, 1997; Hoernle et al., 2009). Line 29: Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974).

Page 1868 Lines 3-4: References appear to be listed alphabetically; they should be listed chronologically. Lines 3, 10: Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Line 5: Replace “fragmentation” with “internal deformation.” Lines 15-17: More detail should be provided on 1) the spacing of instruments along the profile, eg, “u instruments were spaced at v km at the WSW end of the profile, w instruments were spaced at x km in the middle of the profile, and y instruments were spaced at z km at the ENE end of the profile,” and 2) which instruments did not yield complete data, which should also be color-coded on Figure 1. Line 21: Replace “was” with “were.”

Page 1869 Lines 22-25: The authors should detail the range of vertical and horizontal resolution of the data, as well as the uncertainties in P and S wave velocities.

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Page 1870 Lines 5-7: Was the latest version (V23) used? Line 20: Replace “plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Line 23: Replace “Island” with “Islands,” as named by Winterer et al (1974).

Page 1871 Lines 7-9: Insert references for sediment thickness and basement highs, as this is not the first work to recognize these. Line 7: Replace “sub-plateau” with “sub-province,” consistent with the terminology of Winterer et al (1974). Line 19: Delete “down.”

Page 1872 Lines 1, 26: Replace “Island” with “Islands,” as named by Winterer et al (1974). Lines 1-2: Could this be a function of resolution and topography? Line 5: Move “magmatic” to between “intrusive” and “features.” Lines 9-14: Data coverage in the Penrhyn and Samoan basins is relatively limited – how confident are the authors that these are robust results?

Page 1872 Lines 14-15: This sentence belongs in the discussion section. Line 22: Replace “the middle crustal layer extends to the basement” with “the upper crustal layer is absent, and the top of the middle crustal layer is acoustic basement.” Line 26: Replace “Island” with “Islands,” as named by Winterer et al (1974).

Page 1873 Line 1: Replace “Island” with “Islands,” as named by Winterer et al (1974). Lines 15-16: Primary references should be cited (eg, Coffin and Eldholm, 1994, should replace Coffin et al., 2006). Line 17: Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Lines 19-20: Replace “very little” with “a few.” Line 24: Somewhere the authors need to state clearly that crustal thickness throughout (?) the manuscript refers to both sediment and igneous crust. The literature on LIPs contains a mix of work where crustal thickness can either be this combination or igneous crust only.

Page 1874 Line 8: Replace “Samoan” with “Tokelau.” Line 9: Replace “Island” with “Islands,” as named by Winterer et al (1974). Lines 11-12: None of these references document that the “crust of the Manihiki Plateau is severely faulted;” the authors need

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to be more specific and cite the relevant literature. For example, Winterer et al (1974) and subsequent workers (eg, Ai et al (2008) and Pietsch & Uenzellman-Neben (submitted) showed that the margins of Manihiki, the Danger Islands Troughs, and the Suvarov Trough are severely faulted, but not the Manihiki Plateau in general. References appear to be listed alphabetically; they should be listed chronologically. Lines 16, 18: Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Lines 17-18: The presence of a continuous HVZ beneath both the High and Western plateaus is a key result, as this is a defining characteristic of LIPs. The absence of a break in the HVZ between the sub-provinces argues against “fragmentation” of these parts of the plateau, but rather for “internal deformation.” Farther afield, the presence or absence of a HVZ beneath Robbie Ridge could be used to argue for or against, respectively, the reconstructions of Taylor (2006) and Chandler et al (2012, 2013). Lines 18-20, 24-25: References appear to be listed alphabetically; they should be listed chronologically.

Page 1875 Lines 1-2: This is an interesting result. Could the presence or absence of a HVZ beneath the Tokelau Basin be a key indicator? If not an issue of resolution, what explanations could there be for the lack of a clear boundary? Lines 3, 18: Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Lines 6-7: Primary references should be cited (eg, Coffin and Eldholm, 1994, should replace Coffin et al., 2006). References appear to be listed alphabetically; they should be listed chronologically. Lines 11-12: Pietsch & Uenzelmann-Neben (submitted) needs to be referenced here. Lines 16-18: Although not observed on the Western Plateaus seismic profile, ample evidence exists for later stage/secondary volcanism on the Western Plateaus in the satellite-derived free air gravity field and predicted bathymetry, as well as ages of igneous rock samples from features surmounting the Western Plateaus (Hoernle et al, 2009). The authors need to consider all relevant data in making such conclusions, as opposed to only the seismic profiles. Line 20: References appear to be listed alphabetically; they should be listed chronologically. Lines 21-22: It is not clear why Ito & Taira (2000) is referenced here, as that work addresses

the Ontong Java Plateau. Line 24: Winterer et al (1974) should be cited here, among others.

Page 1876 Lines 4-6: Although not observed on the Western Plateaus seismic profile, ample evidence exists for later stage/secondary volcanism on the Western Plateaus in the satellite-derived free air gravity field and predicted bathymetry, as well as ages of igneous rock samples from features surmounting the Western Plateaus (Hoernle et al, 2009). The authors need to consider all relevant data in making such conclusions, as opposed to only the seismic and gravity profiles. Lines 6-7, 10-11: Identifying faults, horst, and graben from refraction data is extremely challenging; the authors should present the reflection data to make their case. Aside from the one graben apparent on the seafloor, could the velocity discontinuities alternatively represent boundaries between original Western Plateaus crust and such crust modified by later stage/secondary volcanism? Lines 12-13: No compelling data are presented for the presence or absence of normal faults; the authors need to present the reflection data to make their case. Lines 13-14: The decrease in depth to Moho has at least two plausible explanations: 1) crustal thinning, and 2) original thickness. In the absence of well-imaged normal faulting, the simpler explanation is that Manihiki Plateau crust thins towards its edges. Lines 14-19: The authors have not made a compelling case for this; they need to present and consider all relevant data. Lines 20, 24, 26: Replace “Island” with “Islands,” as named by Winterer et al (1974). Lines 20-21: Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Lines 22-23: What specifically are “relicts of a former spreading center,” and how do they differ from lower crustal layer and crust-mantle boundary structures associated with pull-apart basins/releasing bends along transform faults? This interpretation seems to be over-reach. Lines 22-26: Could another explanation be vertical resolution of the data and overall thinning of two middle crustal layers? Lines 26-28: This conclusion is not justified by the foregoing analysis or data contained in the manuscript; the authors either need to present and consider all relevant data in support of this conclusion, or re-think the issues.

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Page 1877 Line 4: Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Line 5: Replace “show amazing differences, especially in the upper crustal layers and the crustal thicknesses” with “on the basis of the seismic profiles, share a significant similarity in the presence of a continuous HVZ beneath the two, but differ in their upper crustal layers and the crustal thickness.” In general, the authors appear to under-emphasize similarities, and over-interpret/over-emphasize differences between the two sub-provinces. Line 16: Primary references should be cited; Coffin and Eldholm (1994) should replace Coffin et al (2006). Lines 21-26: Two sentences contradict one another, namely “This layer is not resolved as a crustal unit in all LIPs...” and “...the Western Plateaus is missing a crustal layer present in all other oceanic LIPs.” The first statement appears to be true in both Ridley & Richards (2010) and Figure 15, so the second statement needs to be amended. Lines 24-26: The clause “a layer associated with mafic intrusions formed during a secondary volcanic phase” does not appear to be true; none of the three references cited explain the origin of this layer as a secondary volcanic phase. Again, references appear to be listed alphabetically; they should be listed chronologically.

Page 1878 Line 1: What is the history of the calcite compensation depth (CCD) in the vicinity of the Manihiki Plateau, and how might that inform the presence or absence of carbonate banks at significant depths? Lines 2-7: Inoue et al (2008) do not ascribe the upper crust of Ontong Java to any significant regional secondary volcanic phases; this interpretation is not common for LIPs other than Hikurangi and Manihiki. Lines 7-8: References appear to be listed alphabetically; they should be listed chronologically. Lines 11-15: Although not observed on the Western Plateaus seismic profile, ample evidence exists for later stage/secondary volcanism on the overall Western Plateaus in the satellite-derived free air gravity field and predicted bathymetry, in contrast to the authors’ assertion, as well as ages of igneous rock samples from features surmounting the Western Plateaus (Hoernle et al, 2009). The authors need to consider all relevant data in making such conclusions, as opposed to only the seismic and gravity profiles. Lines 15-16: Although what “This” refers to is not entirely clear, assuming that

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it refers to “fault complexes and ridge systems,” the Kerguelen Plateau also has internal fault complexes, horst, and graben (eg, Coffin et al, 1986; Munsch et al, 1993). Therefore, this sentence should be amended. Lines 17-20: The authors appear to under-emphasize similarities, and over-interpret/over-emphasize differences between the Western Plateaus and other LIPs. Crustal structure of Western Plateaus shows the primary salient characteristic of all oceanic LIPs, namely a HVZ, and that HVZ is continuous with the High Plateau. Above the HVZ, crustal structure of the Western Plateaus does differ from that of the High Plateau, but does not differ markedly from some LIP crustal structures documented in Ridley & Richards (2010) and Figure 15. Lines 20-21: Replace “all” with “key.” Lines 21, 25: Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Lines 21-23: On the basis of all relevant data, this conclusion is not justified. Both sub-provinces are characterized by later stage/secondary volcanism (Sandwell & Smith, 1997; Hoernle et al, 2009), so how specifically do their magmatic histories following formation differ? Evidence for different tectonic evolutions is not compelling. Arguably more interesting is that the High Plateau would appear to be the locus/main eruptive center for the entire Manihiki Plateau; it has the thickest crust, the shallowest bathymetry, probably a substantial subaerial emplacement and erosion history, and the thickest volcanoclastic sequences. The Western Plateaus, in contrast, were distal to the locus/main eruptive center, have crust that thins away from that center, and likely lacks a subaerial history and corresponding thick volcanoclastic sequences.

Page 1879 Line 1: Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Lines 3-5: This is not the case for Ontong Java, and the story is more complicated. There is no evidence from the main Ontong Java Plateau, with crust up to twice as thick as Manihiki’s High Plateau, for subaerial emplacement and erosion, and only Manihiki’s High Plateau shows evidence for subaerial emplacement and erosion. Lines 6-8, 13: References appear to be listed alphabetically; they should be listed chronologically. Line 8: Replace “Island” with “Islands,” as named by Winterer et al (1974). Line 11: Insert “proposed” between “The” and “conju-

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gate.” Lines 11-14: Crustal thinning is one possibility, but another equally valid explanation is distance from the locus/main eruptive centers. Assuming that the proposed Ontong Java-Manihiki reconstruction is correct, at least two main eruptive centers are required, one for OJP’s main plateau and one for Manihiki’s High Plateau, as it seems impossible to join these two areas of thickest crust (and in the case of the High Plateau, major subaerial emplacement and erosion). The authors should consider and discuss this possible explanation as well. None of the three references cited suggest that the crust has been thinned, but rather show that it is thinner on the OJP flanks than on the main plateau. References appear to be listed alphabetically; they should be listed chronologically. Lines 23-25: The case for deep crustal faults must be much more strongly justified (see above), preferably with seismic reflection data. Line 26: Delete “chain.” Not all seamounts on the High Plateau appear to be parts of chains. Lines 27-28: Replace “The” with “We interpret,” and replace “are visible in” with “from.” Lines 28-29: This sentence implies that the entire upper crust of the Manihiki Plateau formed by later stage/secondary volcanism; the age data of Timm et al (2011) argue strongly against this. The sentence must be amended accordingly.

Page 1880 Line 4: Replace “Island” with “Islands,” as named by Winterer et al (1974). Also, alkaline basalts were emplaced elsewhere on the High and Western plateaus (Hoernle et al, 2009). Lines 5-6: Although this may be true along the seismic profile, ample evidence exists for later stage/secondary volcanism on the overall Western Plateaus in the satellite-derived free air gravity field and predicted bathymetry, in contrast to the authors’ assertion, as well as ages of igneous rock samples from features surmounting the Western Plateaus (Hoernle et al, 2009). The authors need to consider all relevant data in making such conclusions, as opposed to only the seismic and gravity profiles. Lines 6-9, 14-16: What is the evidence for the Western Plateaus ever being close to sea level? If one assumes that Manihiki Plateau lithosphere in general, and Western Plateaus crust in particular, subsides as other plateaus and normal oceanic lithosphere (eg, Coffin, 1992; Ito & Clift, 1998; Wallace, 2002; Ingle & Coffin, 2004; Roberge et al, 2005), is it likely that the Western Plateaus were ever near sea level?

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Also, what is the history of the calcite compensation depth (CCD) in the vicinity of the Manihiki Plateau, and how might that inform the presence or absence of carbonate banks at significant depths? Lines 9-11: Do the velocities rule out basalt as acoustic basement? Hoernle et al (2009) report on later stage/secondary alkaline volcanism from the Western Plateaus, so at least some of the upper crust is basalt. Lines 11, 14: Replace “carbonatic” with “carbonate.” Lines 17-21: Could the thinning of the upper (sedimentary) crust be also related to the calcite compensation depth (CCD)? Lines 21-22: Some clarification is needed; “unusual low velocities of the acoustic basement” (line 10) seems to contradict “mafic rocks are exposed in the upper crust”? Lines 23-26: Volcanic activity moving its activity to the east seems to be a gross generalization: what about Suvarov Island on the southern High Plateau and the seamounts to the north of the High Plateau? Again, the authors need to consider all relevant data in making such conclusions, as opposed to only the seismic and gravity profiles.

Page 1881 Lines 1, 20, 24: Replace “Island” with “Islands,” as named by Winterer et al (1974). Lines 21, 26: Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Lines 7-9: Again, the decrease in depth to Moho has at least two plausible explanations: 1) crustal thinning, and 2) original thickness. In the absence of well-imaged normal faulting, the simpler explanation is that Manihiki Plateau crust thins towards its edges. Lines 10-11: The meaning of the “last magmatic pulse” needs clarification; is it the main formation of the Manihiki Plateau, or the later stage/secondary volcanism? Pelagic sediment has not covered the islands and atolls surmounting the plateau, so this sentence needs amendment. Tectonic features – faults, horst, graben, basins, ridges – post-date the main formation of the plateau, but appear to be older than some later stage/secondary volcanism, so the sentence needs further amendment. Lines 11-13: From what levels did the High Plateau and Western Plateaus subside? Lines 15-17: Again, the decrease in depth to Moho on the Western Plateaus has at least two plausible explanations: 1) crustal thinning, and 2) original thickness. In the absence of well-imaged normal faulting, the simpler explanation is that Manihiki Plateau crust thins towards its edges. Lines 17-20: Again,

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although this may be true along the seismic profile, ample evidence exists for later stage/secondary volcanism on the overall Western Plateaus in the satellite-derived free air gravity field and predicted bathymetry, in contrast to the authors' assertion, as well as ages of igneous rock samples from features surmounting the Western Plateaus (Hoernle et al, 2009). Thus, it was not "cut off from the magma supply initiating the secondary volcanic stages." References appear to be listed alphabetically; they should be listed chronologically. Lines 20-22: Replace "dissection" with "demarcation." Although the two seismic profiles differ, data and analyses presented in the manuscript do not present a compelling case that the High Plateau and Western Plateaus overall experienced different magmatic and tectonic evolution any more than different parts of each sub-province experienced different magmatic and tectonic evolutions. Lines 22-23: The authors need to clarify which trough is being referenced. If the Danger Islands Troughs, basalt samples analyzed by Ingle et al (2007) and Timm et al (2011) are evidence that upper (igneous) crust does crop out along them, as does volcanoclastic sediment (Werner and Hauff, 2007). Lines 23-25: Basalt samples described by Hoernle et al (2009) indicate that later stage/secondary volcanism affected the Danger Islands Troughs, indicating that magma supply to them were not necessarily limited. Was magma supply to the High Plateau limited? The islands, atolls, seamounts, sea knolls, and ridges surmounting the High Plateau would argue against this possibility. Lines 25-27: Is this any different than the thousands of seamounts and sea knolls that have formed on normal Pacific Ocean crust? This conclusion seems self-evident.

Page 1882 Lines 1-3: Replace "tectonic and magmatic overprint" with "tectonics and magmatism," and "rifting" with "breakup." However, a convincing case for the Manihiki Plateau's role in the breakup of Ontong Java Nui has not been made in this version of the manuscript. Lines 6, 8, 27: Replace "sub-plateaus" with "sub-provinces," consistent with the terminology of Winterer et al (1974). Line 8: Replace "reconstructed" with "illuminated." The new data and analyses thereof do not provide much additional insight into temporal and spatial reconstructions of the Manihiki Plateau; rather, the main contribution is defining the crustal structure of the feature. Lines 9-10: Delete

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“in highly stretched LIP crust.” The authors have not demonstrated that this crust is stretched; it could simply thin farther from the locus/eruptive center. Lines 10-11, 12-14, 20-21, 25-26: These statements are not correct. Mafic extrusives, including those from secondary volcanic stages, have been dredged from seamounts/sea knolls surmounting the Western Plateaus and from the eastern flank of the Western Plateaus exposed in the Danger Islands Troughs (Ingle et al, 2007; Werner & Hauff, 2007; Hornle et al, 2009; Timm et al, 2011). Lines 11-12: Again, seismic reflection data must be presented to argue the case for “deep reaching faults.” Lines 12-13: Imaging the feeder system for either original formation or secondary magmatism is highly speculative, and the data and analyses presented in this version of the manuscript do not make a compelling case. Feeder systems are challenging to identify in dissected continental flood basalts; the resolution of wide-angle seismic data is arguably far too coarse – by orders of magnitude – to identify feeder systems. Line 15: Replace “the normal” with “a typical.” Line 19: Replace “Island” with “Islands,” as named by Winterer et al (1974). Lines 22-23: Is this any different to physically separate parts of normal Pacific Ocean crust? This conclusion seems self-evident. Lines 25-26: Again, the authors have not demonstrated that this crust is stretched; it could simply thin farther from the locus/eruptive center.

Page 1883 Line 1: Replace “sub-plateaus” with “sub-provinces,” consistent with the terminology of Winterer et al (1974). Lines 1-2: A convincing case for the Manihiki Plateau’s role in the breakup of Ontong Java Nui has not been made in this version of the manuscript.

Page 1884 Line 12: Replace “Island” with “Islands,” per the title of the paper.

Page 1890 The source of the bathymetry should be referenced.

Page 1891 Caption: Replace “Island” with “Islands,” as named by Winterer et al (1974). Vertical exaggeration should be indicated.

Page 1892 Caption: Replace “Island” with “Islands,” as named by Winterer et al (1974).

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Vertical exaggeration should be indicated.

Page 1893 Caption: vertical exaggeration should be indicated.

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Page 1902 On figure replace “Island” with “Islands,” as named by Winterer et al (1974).
Caption: vertical exaggeration should be indicated.

Page 1903 Caption: vertical exaggeration should be indicated.

Page 1905 On figure replace “sub-plateaus” with “sub-provinces,” and replace “Island” with “Islands,” consistent with the terminology of Winterer et al (1974).

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