

# Investigation and Evaluation of the Multiple-liquefaction Site at the Southern Taiwan

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Southern Taiwan experienced several large earthquakes on 5 December 1946 ( $M_w=6.3$ ), 4 March 2010 ( $M_w=6.4$ ) and 6 February 2016 ( $M_w=6.6$ ), respectively. Liquefaction phenomenon evidences was observed at Hsinhwa district, Tainan city, Taiwan during the 1964, 2010, and 2016 earthquake. Re-liquefaction at this site was confirmed by GPS surveying at the sand boiling locations after last two earthquakes. Seismic cone penetration test (SCPT) and boring were conducted at this site after 2010, and 2016 earthquake. The recurrence of liquefaction, availability of pre-earthquake logging, and high fine content in the liquefied soil stratum make this case valuable for detail study. This paper presents the results of the investigation and evaluates the liquefaction potential of the reliquefied site by different period exploration data. The comparison of the SCPT strength profile before and after the last earthquakes seems to indicate that no significant variation has occurred in this multiple liquefied site, making the area vulnerable to liquefaction induced sand boiling in future large-scale earthquakes. Liquefaction analyses with in situ test data show that this site is still highly susceptible to liquefaction.

Keywords: Earthquake, Liquefaction, Seismic Cone Penetration Test



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