Winds and Currents:
A Look at Nephi's Ocean Crossing

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1 Nephi 18:23 "We had sailed for the space of many days."

The Book of Mormon provides only fragmentary information about the voyage of Lehi's party from Arabia to America. But external sources help us grasp what might have been involved. If one were to sail from the southern coast of Arabia across the Indian Ocean and then across the Pacific to Central America (which seems to have been Lehi's most likely route), what combination of winds, currents, times, and distances would make the voyage feasible under the normally prevailing conditions?

From Arabia to Indonesia: Navigation on the Indian Ocean remained in many ways the same from very early times until the development of steamships.[1] Sailing there has always depended upon the monsoons. The word *monsoon* is from the Arabic *mawsim*, which literally means "the date for sailing from one port in order to reach another." According to Tibbetts, the end of March or beginning of April was the best time to head east from the south Arabian coast; if delayed too long after that, a ship would encounter huge, dangerous swells as it neared the west coast of India.[2]

The route would have gone essentially straight east at about fifteen degrees north latitude to the Indian coast, then south around Ceylon in time for the southwest monsoon, first felt in May in the Bay of Bengal. Sumatra would have been reached no later than September. The great storm noted in 1 Nephi 18:13-14 could have been either a cyclonic storm or a typhoon, which are violent in the Bay of Bengal. The "great calm" in 1 Nephi 18:21 may have been a doldrum. If Nephi's vessel continued through the Java and Flores Seas of modern Indonesia, the westerly winds from December to March could have taken it past those areas within the first year of the trip. This route is most likely, although there are other possibilities.

Since boats routinely had to be beached for repairs after storms, or to have their bottoms scraped, or to await favorable winds, it is reasonable to assume that Lehi's party would have stopped from time to time on their journey through these islands. The closeness of major islands and historical records of other voyaging in the area suggest further that travelling from Java to the Admiralty Islands off the north coast of New Guinea would not have been especially difficult.

Across the Pacific: Professor Ben Finney, an authority at the University of Hawaii on Pacific Island voyaging, has recently pointed out how early voyagers could have moved from Melanesia out into the broad Pacific to the east.[3] Until recently, he notes, scholars have been puzzled about easterly travel by Polynesians across the Pacific, since the normal trade winds would appear to have posed an almost insurmountable barrier to easterly movement. Finney reports that new information about the meteorological phenomenon known on the west coast of South America as El Niño now changes the picture.

When El Niño conditions prevail, warm surface water from the equatorial zone moves south down the coast of South America, upsetting many normal conditions.[4] It is now known that the trouble begins with a slackening of

the normal trade winds. This causes a strong easterly flow of water from the western Pacific all the way to South America. That is accompanied by unusual westerly winds in place of the trades. Under these conditions, travel from Melanesia to South America is quite feasible. Finney proposes that the makers of Lapita pottery sailed out of Melanesia on such westerlies, reaching western Polynesia before 1000 B.C. Their descendants would have used the same winds to move, perhaps all the way to the Marquesas Islands from Tonga. Finney further suggests that the same winds might bear a vessel virtually to the Americas. Depending on conditions, the winds could then take a vessel either to South or Central America.[5] It seems likely that these spells of westerlies have occurred every seven to sixteen years throughout the past. Other combinations of winds and routes eastward are also possible, as Finney notes.

How long might Nephi's voyage have taken? From Tonga to the Marquesas is about 30 percent of the distance from the Bismarck Archipelago to Central America. Finney figures it could have taken about thirty days to sail this distance under El Niño conditions. Thus, the whole Pacific distance might be four or five times that, or, in other words, a little less than half a year; the entire journey from Arabia to Central America might have taken from one to two years, depending on the route and time allowed to stop for food, water, and repairs.

Of course, Nephi could not have explicitly planned such a voyage. He indicates that his group was guided by God through the Liahona (see 1 Nephi 18:12, 21-22). Divine knowledge of wind and sea conditions, within the range we now know to have existed, could indeed have permitted the successful crossing of two oceans—more than halfway around the earth—in a plausible period of time.

This Update was based on research by John L. Sorenson, April 1986. For further reflection on other aspects of Lehi's voyage, see Sorenson's "Transoceanic Crossings," in Monte Nyman and Charles Tate, eds., First Nephi *(Provo: Religious Studies Center, 1988), 251-70. A monumental reference work documenting and annotating hundreds of proposed or possible transoceanic connections between the Old and the New Worlds is John L. Sorenson and Martin H. Raish*, Pre-Columbian Contact with the Americas across the Oceans *(Provo: Research Press, 1990).*

Footnotes

1. See George Hourani, *Arab Seafaring in the Indian Ocean in Ancient and Early Medieval Times* (Princeton: Princeton University Press, 1951); G. R. Tibbetts, *Arab Navigation in the Indian Ocean before the Coming of the Portugese*, Oriental Translation Fund, new series, vol. 42 (London: Royal Asiatic Society, 1981), xi-50; Pliny the Elder, *Natural History* VI, 26, 101-6. Tim Severin, "In the Wake of Sinbad," *National Geographic* 162 (July 1982): 2-40, reports a modern reenactment of such a voyage.

2. Tibbetts, *Arab Navigation*, 360-71.

3. Ben Finney, "Anomalous Westerlies, El Niño, and the Colonization of Polynesia," *American Anthropologist* 87 (1985): 9-26.

4. For coverage of the most powerful El Niño on record, that in the winter of 1982-83, see Thomas Y. Canby, "El Niño's Ill Wind," *National Geographic* 165 (February 1984): 144-83.

5. See the chart in Finney, "Anomalous Westerlies," 13.