Roped-Soloing Fall – Protection Pulled Out

California, Yosemite Valley, El Capitan

The first pitch of Zodiac, showing (1) climber's high point near the top belay anchor and (2) the highest piece of protection that held. The climber estimated he fell 110 feet. Parker Kempf

On the morning of December 2, I started up the first pitch of Zodiac (5.9 A3) on El Capitan. I was roped soloing and planning for three or four days on the wall. I had led this first pitch two other times.

I climbed the pitch clean (no pitons, C3+) and was about 10 feet from the anchor, underneath a small roof, when the small offset nut I was weighting blew out. As I fell, two marginal placements beneath me also pulled out. The next piece was a well-placed 0.75-sized cam. Surprisingly, this piece sheared out of the parallel, non-flaring granite crack. Below this was a well-placed nut, which somehow came unclipped from the rope. And below this was another 0.75-size cam—the carabiner clipped to this cam broke, presumably due to a "nose hook."

In all, six placements pulled out or otherwise failed, and I fell approximately 110 feet, stopping at eye level with the first bolt on the route. The aiders clipped to the ends of my daisies were touching the ground.

Remarkably, I sustained only a small scratch on one ankle and was otherwise uninjured. The Silent Partner I was using as a self-belay device had broken in the locked position and was no longer functional. Returning later with a friend to clean the rest of my gear from the route, we discovered the piece that caught my fall was a medium-size DMM offset stopper, which had half of its cable blown through. Had this piece failed, the fall surely would have been fatal.

ANALYSIS

I've done over 15 big-wall solos, including two roped solos of El Capitan. I bounce-test all my aid placements, even C1 placements in splitter cracks, just to be sure the piece does not shift out of its optimal placement. The first pitch of Zodiac gets very high traffic, which has led to an infamous amount of "polishing" in the crack. I certainly was not expecting a well-placed 0.75 to shear out of solid rock, put maybe the polish has reduced the rock friction so that a nut would have been more appropriate here.

It had not rained at all recently, but it was early morning in winter. Although I did not notice the rock was wet, it's possible there was dew or other moisture in the crack, exacerbating the polished rock issue. Again, passive protection would have probably held better at this placement. Perhaps it also would have helped to wait a little before starting and let any morning dew evaporate.

Because I was roped soloing, I was not using quickdraws or extending placements; my rope was fixed to a ground anchor, and I fed slack through the "brake side" of my solo belay device. (There is no rope being pulled through protection in a lead roped-solo scenario.) It's possible, though far from certain, that extending the "failed" pieces with quickdraws might have made the cam less likely to pull out, the nut less likely to come unclipped, and/or the carabiner less likely to break.

The broken carabiner, an old-style Camp Photon, had a distinct notch between end of the nose of the carabiner and the “basket.” This notch was prone to snagging slings and other gear, and “nose hooking” significantly weakens a carabiner. Using a key-lock carabiner with a narrower angle to its basket would have helped keep the force of the fall along the spine of the carabiner. (Source: Parker Kempf.)

Images

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Article Details

Author	Parker Kempf
Publication	ANAM
Volume	11
Issue	71
Page	44
Copyright Date	2018
Article Type	Accident reports