Inference at $*$ 1 2 1 2 1 1 2
 of proof for Lemma fast-fib:

1. $n : \mathbb{Z}$
2. $0 < n$
3. $\forall a, b{:}\mathbb{N}.$
   $\{m{:}\mathbb{N} \mid$
    $\forall k{:}\mathbb{N}.$
    $(a = \text{fib}(k))$
    $\Rightarrow ((k \leq 0) \Rightarrow (b = 0))$
    $\Rightarrow ((0 < k) \Rightarrow (b = \text{fib}(k - 1)))$
    $\Rightarrow (m = \text{fib}((n - 1)+k))\}$
4. $a : \mathbb{N}$
5. $b : \mathbb{N}$
6. $\forall b_1{:}\mathbb{N}.$
   $\{m{:}\mathbb{N} \mid$
    $\forall k{:}\mathbb{N}.$
    $(a+b = \text{fib}(k))$
    $\Rightarrow ((k \leq 0) \Rightarrow (b_1 = 0))$
    $\Rightarrow ((0 < k) \Rightarrow (b_1 = \text{fib}(k - 1)))$
    $\Rightarrow (m = \text{fib}((n - 1)+k))\}$
7. $m : \mathbb{N}$
8. $\forall k{:}\mathbb{N}.$
   $(a+b = \text{fib}(k))$
   $\Rightarrow ((k \leq 0) \Rightarrow (a = 0))$
   $\Rightarrow ((0 < k) \Rightarrow (a = \text{fib}(k - 1)))$
   $\Rightarrow (m = \text{fib}((n - 1)+k))$
9. $k : \mathbb{N}$
10. $a = \text{fib}(k)$
11. $(k \leq 0) \Rightarrow (b = 0)$
12. $(0 < k) \Rightarrow (b = \text{fib}(k - 1))$
13. $\neg(k = 0)$

$\vdash a+b = \text{fib}(k+1)$

 by (RecUnfold ‘fib‘ 0)
 CollapseTHEN (((if (0
) =0 then SplitOnConclITE else SplitOnHypITE (0))$\cdot$)
 CollapseTHEN (Auto’)$\cdot$)$\cdot$

  1:

    14. $\neg(k+1 = 0)$
    15. $\neg(k+1 = 1)$
    $\vdash a+b = \text{fib}((k+1) - 1)+\text{fib}((k+1) - 2)$
  .

http://www.nuprl.org/FDLcontent/p0_963683_/p25_480536_{fast-fib}1_2_1_2_1_1_2.html