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

.....antecedent..... NILNIL

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

$\vdash a{+}b = \text{fib}(k{+}1)$
by CaseNat 0 'k'

1:

13. $k = 0$

$\vdash a{+}b = \text{fib}(0{+}1)$

2:

13. $\neg(k = 0)$

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

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http://www.nuprl.org/FDLcontent/p0_963683_/p25_480536_{fast-fib}1_2_1_2_1_1.html