1 ───────────────────────── MODULE *AJupiterH* ─────────────────────────

AJupiter with a history of all list states across the system.

5 EXTENDS *AJupiter*

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7 VARIABLE *list*

8 $varsH \triangleq \langle vars,\ list \rangle$

10 $TypeOKH \triangleq TypeOK \wedge (list \subseteq List)$

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12 $InitH \triangleq Init \wedge list = \{InitState\}$

14 $DoH(c) \triangleq Do(c) \wedge list' = list \cup \{state'[c]\}$

16 $RevH(c) \triangleq Rev(c) \wedge list' = list \cup \{state'[c]\}$

18 $SRevH \triangleq SRev \wedge list' = list \cup \{state'[Server]\}$

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20 $NextH \triangleq$

21     $\vee\ \exists\, c \in Client : DoH(c) \vee RevH(c)$

22     $\vee\ SRevH$

24 $FairnessH \triangleq$

25     $\mathrm{WF}_{varsH}(SRevH \vee \exists\, c \in Client : RevH(c))$

27 $SpecH \triangleq InitH \wedge \square[NextH]_{varsH}\ \ \wedge FairnessH$

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Weak *List* Consistency (*WLSpec*)

32 $WLSpec \triangleq comm!EmptyChannel$

33         $\Rightarrow \forall\, l1,\ l2 \in list :$

34             $\wedge Injective(l1)$

35             $\wedge Injective(l2)$

36             $\wedge Compatible(l1,\ l2)$

38 THEOREM $SpecH \Rightarrow WLSpec$

Strong *List* Consistency (*SLSpec*)

42 └───

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