甲状腺智能体：10 条执行轨迹自然语言说明

本文件对 10 条执行轨迹进行自然语言解读，涵盖流程意图、关键步骤、回滚策略与报告校验结果。

# 1. 案例 P00001 —— P00001\_direct\_success\_1

类型：直达成功（无回滚）

流程主线：ORG\_OVERVIEW → DIFFUSE\_EVAL → NODULE\_EVAL → TI-RADS → VIS\_REPORT → GENERATE\_REPORT

## 步骤说明

**步骤 1：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.tirads\_score

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 2：**EXECUTE DIFFUSE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.tirads\_score

· 执行节点并写入字段：DIFFUSE\_EVAL

**步骤 3：**EXECUTE NODULE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, state.tirads\_score

· 执行节点并写入字段：NODULE\_EVAL

**步骤 4：**EXECUTE TI-RADS

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, state.tirads\_score

· 执行节点并写入字段：TI-RADS

**步骤 5：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, state.tirads\_score, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 6：**GENERATE\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, state.tirads\_score, reports.visual\_report

· 报告校验：GENERATE\_REPORT validated: passed=True

✓ 该步骤后流程已完成。

## 简要点评

按部就班完成核心分析与报告校验。

# 2. 案例 P00001 —— P00001\_clarify\_then\_success\_1

类型：澄清后成功（含 CLARIFY 步骤）

流程主线：ORG\_OVERVIEW → CLARIFY(thyroid\_nodules\_detail) → NODULE\_EVAL → TI-RADS → VIS\_REPORT → GENERATE\_REPORT

## 步骤说明

**步骤 1：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.tirads\_score

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 2：**CLARIFY （槽位：thyroid\_nodules\_detail）

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.tirads\_score

· 澄清槽位：CLARIFY thyroid\_nodules\_detail

**步骤 3：**EXECUTE NODULE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined, state.tirads\_score

· 执行节点并写入字段：NODULE\_EVAL

**步骤 4：**EXECUTE TI-RADS

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined, state.tirads\_score

· 执行节点并写入字段：TI-RADS

**步骤 5：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined, state.tirads\_score, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 6：**GENERATE\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined, state.tirads\_score, reports.visual\_report

· 报告校验：GENERATE\_REPORT validated: passed=True

✓ 该步骤后流程已完成。

## 简要点评

在关键处加入澄清（CLARIFY）以补全槽位/上下文。

# 3. 案例 P00001 —— P00001\_mistake\_then\_fix\_full\_1

类型：误操作→回退→完整修复（full\_downstream）

流程主线：ORG\_OVERVIEW → DIFFUSE\_EVAL → VIS\_REPORT → ROLLBACK(ORG\_OVERVIEW, full\_downstream) → ORG\_OVERVIEW → DIFFUSE\_EVAL → NODULE\_EVAL → TI-RADS → VIS\_REPORT → GENERATE\_REPORT

## 步骤说明

**步骤 1：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.tirads\_score

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 2：**EXECUTE DIFFUSE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.tirads\_score

· 执行节点并写入字段：DIFFUSE\_EVAL

**步骤 3：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.tirads\_score, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 4：**ROLLBACK ORG\_OVERVIEW（策略：full\_downstream）

观察到/可用字段：state.diffuse\_lesion\_evaluation\_result, state.tirads\_score

· 回滚（级联清除所有下游）：ROLLBACK ORG\_OVERVIEW full\_downstream: cleared 21 fields; removed nodes=['ARCHIVE\_REPORT', 'BLOOD\_NODULE', 'FOLLOW\_UP', 'FUNC\_IMAGING', 'NODULE\_EVAL', 'NODULE\_FINE', 'ORG\_OVERVIEW', 'PATIENT\_COMM', 'STRUCT\_REPORT', 'TI-RADS', 'VIS\_REPORT']

**步骤 5：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.tirads\_score

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 6：**EXECUTE DIFFUSE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.tirads\_score

· 执行节点并写入字段：DIFFUSE\_EVAL

**步骤 7：**EXECUTE NODULE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, state.tirads\_score

· 执行节点并写入字段：NODULE\_EVAL

**步骤 8：**EXECUTE TI-RADS

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, state.tirads\_score

· 执行节点并写入字段：TI-RADS

**步骤 9：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, state.tirads\_score, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 10：**GENERATE\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, state.tirads\_score, reports.visual\_report

· 报告校验：GENERATE\_REPORT validated: passed=True

✓ 该步骤后流程已完成。

## 简要点评

包含回滚策略，体现了对依赖污染的清理与重建。

# 4. 案例 P00002 —— P00002\_direct\_success\_2

类型：直达成功（无回滚）

流程主线：ORG\_OVERVIEW → NODULE\_EVAL → DIFFUSE\_EVAL → TI-RADS → VIS\_REPORT → GENERATE\_REPORT

## 步骤说明

**步骤 1：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 2：**EXECUTE NODULE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined

· 执行节点并写入字段：NODULE\_EVAL

**步骤 3：**EXECUTE DIFFUSE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined

· 执行节点并写入字段：DIFFUSE\_EVAL

**步骤 4：**EXECUTE TI-RADS

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined

· 执行节点并写入字段：TI-RADS

**步骤 5：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 6：**GENERATE\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, reports.visual\_report

· 报告校验：GENERATE\_REPORT validated: passed=True

· 警告：WARNING: TI-RADS: Per-nodule TI-RADS only (no overall grading).

· 警告：WARNING: VIS\_REPORT: Per-nodule TI-RADS only (no overall grading).

✓ 该步骤后流程已完成。

## 警告摘要

⚠ WARNING: TI-RADS: Per-nodule TI-RADS only (no overall grading).

⚠ WARNING: VIS\_REPORT: Per-nodule TI-RADS only (no overall grading).

## 简要点评

按部就班完成核心分析与报告校验。

# 5. 案例 P00002 —— P00002\_mistake\_then\_fix\_aggr\_1

类型：误操作→回退→聚合层修复（aggregate\_only）

流程主线：ORG\_OVERVIEW → NODULE\_EVAL → VIS\_REPORT → ROLLBACK(NODULE\_EVAL, aggregate\_only) → TI-RADS → VIS\_REPORT → GENERATE\_REPORT

## 步骤说明

**步骤 1：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 2：**EXECUTE NODULE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined

· 执行节点并写入字段：NODULE\_EVAL

**步骤 3：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 4：**ROLLBACK NODULE\_EVAL（策略：aggregate\_only）

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 回滚（仅清除聚合/报告链）：ROLLBACK NODULE\_EVAL aggregate\_only: cleared 10 fields; removed nodes=['ARCHIVE\_REPORT', 'FOLLOW\_UP', 'NODULE\_EVAL', 'PATIENT\_COMM', 'STRUCT\_REPORT', 'TI-RADS', 'VIS\_REPORT']

**步骤 5：**EXECUTE TI-RADS

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 执行节点并写入字段：TI-RADS

**步骤 6：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 7：**GENERATE\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, reports.visual\_report

· 报告校验：GENERATE\_REPORT validated: passed=True

· 警告：WARNING: TI-RADS: Per-nodule TI-RADS only (no overall grading).

· 警告：WARNING: VIS\_REPORT: Per-nodule TI-RADS only (no overall grading).

✓ 该步骤后流程已完成。

## 警告摘要

⚠ WARNING: TI-RADS: Per-nodule TI-RADS only (no overall grading).

⚠ WARNING: VIS\_REPORT: Per-nodule TI-RADS only (no overall grading).

## 简要点评

包含回滚策略，体现了对依赖污染的清理与重建。

# 6. 案例 P00003 —— P00003\_direct\_success\_1

类型：直达成功（无回滚）

流程主线：ORG\_OVERVIEW → DIFFUSE\_EVAL → NODULE\_EVAL → TI-RADS → VIS\_REPORT → GENERATE\_REPORT

## 步骤说明

**步骤 1：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 2：**EXECUTE DIFFUSE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result

· 执行节点并写入字段：DIFFUSE\_EVAL

**步骤 3：**EXECUTE NODULE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined

· 执行节点并写入字段：NODULE\_EVAL

**步骤 4：**EXECUTE TI-RADS

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined

· 执行节点并写入字段：TI-RADS

**步骤 5：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 6：**GENERATE\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, reports.visual\_report

· 报告校验：GENERATE\_REPORT validated: passed=True

· 警告：WARNING: TI-RADS: TI-RADS skipped: no discrete thyroid nodule.

· 警告：WARNING: VIS\_REPORT: No nodule: consider adding gland echo or diffuse evaluation.

✓ 该步骤后流程已完成。

## 警告摘要

⚠ WARNING: TI-RADS: TI-RADS skipped: no discrete thyroid nodule.

⚠ WARNING: VIS\_REPORT: No nodule: consider adding gland echo or diffuse evaluation.

## 简要点评

按部就班完成核心分析与报告校验。

# 7. 案例 P00003 —— P00003\_clarify\_then\_success\_1

类型：澄清后成功（含 CLARIFY 步骤）

流程主线：ORG\_OVERVIEW → CLARIFY(thyroid\_nodules\_detail) → NODULE\_EVAL → TI-RADS → VIS\_REPORT → GENERATE\_REPORT

## 步骤说明

**步骤 1：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 2：**CLARIFY （槽位：thyroid\_nodules\_detail）

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 澄清槽位：CLARIFY thyroid\_nodules\_detail

**步骤 3：**EXECUTE NODULE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined

· 执行节点并写入字段：NODULE\_EVAL

**步骤 4：**EXECUTE TI-RADS

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined

· 执行节点并写入字段：TI-RADS

**步骤 5：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 6：**GENERATE\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined, reports.visual\_report

· 报告校验：GENERATE\_REPORT validated: passed=True

· 警告：WARNING: TI-RADS: TI-RADS skipped: no discrete thyroid nodule.

· 警告：WARNING: VIS\_REPORT: No nodule: consider adding gland echo or diffuse evaluation.

✓ 该步骤后流程已完成。

## 警告摘要

⚠ WARNING: TI-RADS: TI-RADS skipped: no discrete thyroid nodule.

⚠ WARNING: VIS\_REPORT: No nodule: consider adding gland echo or diffuse evaluation.

## 简要点评

在关键处加入澄清（CLARIFY）以补全槽位/上下文。

# 8. 案例 P00003 —— P00003\_mistake\_then\_fix\_full\_1

类型：误操作→回退→完整修复（full\_downstream）

流程主线：ORG\_OVERVIEW → DIFFUSE\_EVAL → VIS\_REPORT → ROLLBACK(ORG\_OVERVIEW, full\_downstream) → ORG\_OVERVIEW → DIFFUSE\_EVAL → NODULE\_EVAL → TI-RADS → VIS\_REPORT → GENERATE\_REPORT

## 步骤说明

**步骤 1：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 2：**EXECUTE DIFFUSE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result

· 执行节点并写入字段：DIFFUSE\_EVAL

**步骤 3：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 4：**ROLLBACK ORG\_OVERVIEW（策略：full\_downstream）

观察到/可用字段：state.diffuse\_lesion\_evaluation\_result

· 回滚（级联清除所有下游）：ROLLBACK ORG\_OVERVIEW full\_downstream: cleared 21 fields; removed nodes=['ARCHIVE\_REPORT', 'BLOOD\_NODULE', 'FOLLOW\_UP', 'FUNC\_IMAGING', 'NODULE\_EVAL', 'NODULE\_FINE', 'ORG\_OVERVIEW', 'PATIENT\_COMM', 'STRUCT\_REPORT', 'TI-RADS', 'VIS\_REPORT']

**步骤 5：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 6：**EXECUTE DIFFUSE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result

· 执行节点并写入字段：DIFFUSE\_EVAL

**步骤 7：**EXECUTE NODULE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined

· 执行节点并写入字段：NODULE\_EVAL

**步骤 8：**EXECUTE TI-RADS

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined

· 执行节点并写入字段：TI-RADS

**步骤 9：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 10：**GENERATE\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, reports.visual\_report

· 报告校验：GENERATE\_REPORT validated: passed=True

· 警告：WARNING: TI-RADS: TI-RADS skipped: no discrete thyroid nodule.

· 警告：WARNING: VIS\_REPORT: No nodule: consider adding gland echo or diffuse evaluation.

✓ 该步骤后流程已完成。

## 警告摘要

⚠ WARNING: TI-RADS: TI-RADS skipped: no discrete thyroid nodule.

⚠ WARNING: VIS\_REPORT: No nodule: consider adding gland echo or diffuse evaluation.

## 简要点评

包含回滚策略，体现了对依赖污染的清理与重建。

# 9. 案例 P00004 —— P00004\_direct\_success\_2

类型：直达成功（无回滚）

流程主线：ORG\_OVERVIEW → NODULE\_EVAL → DIFFUSE\_EVAL → TI-RADS → VIS\_REPORT → GENERATE\_REPORT

## 步骤说明

**步骤 1：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 2：**EXECUTE NODULE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined

· 执行节点并写入字段：NODULE\_EVAL

**步骤 3：**EXECUTE DIFFUSE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined

· 执行节点并写入字段：DIFFUSE\_EVAL

**步骤 4：**EXECUTE TI-RADS

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined

· 执行节点并写入字段：TI-RADS

**步骤 5：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 6：**GENERATE\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.diffuse\_lesion\_evaluation\_result, state.thyroid\_nodules\_determined, reports.visual\_report

· 报告校验：GENERATE\_REPORT validated: passed=True

· 警告：WARNING: TI-RADS: TI-RADS skipped: no discrete thyroid nodule.

· 警告：WARNING: VIS\_REPORT: No nodule: consider adding gland echo or diffuse evaluation.

✓ 该步骤后流程已完成。

## 警告摘要

⚠ WARNING: TI-RADS: TI-RADS skipped: no discrete thyroid nodule.

⚠ WARNING: VIS\_REPORT: No nodule: consider adding gland echo or diffuse evaluation.

## 简要点评

按部就班完成核心分析与报告校验。

# 10. 案例 P00004 —— P00004\_mistake\_then\_fix\_aggr\_1

类型：误操作→回退→聚合层修复（aggregate\_only）

流程主线：ORG\_OVERVIEW → NODULE\_EVAL → VIS\_REPORT → ROLLBACK(NODULE\_EVAL, aggregate\_only) → TI-RADS → VIS\_REPORT → GENERATE\_REPORT

## 步骤说明

**步骤 1：**EXECUTE ORG\_OVERVIEW

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 执行节点并写入字段：ORG\_OVERVIEW

**步骤 2：**EXECUTE NODULE\_EVAL

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined

· 执行节点并写入字段：NODULE\_EVAL

**步骤 3：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, state.thyroid\_nodules\_determined, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 4：**ROLLBACK NODULE\_EVAL（策略：aggregate\_only）

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 回滚（仅清除聚合/报告链）：ROLLBACK NODULE\_EVAL aggregate\_only: cleared 10 fields; removed nodes=['ARCHIVE\_REPORT', 'FOLLOW\_UP', 'NODULE\_EVAL', 'PATIENT\_COMM', 'STRUCT\_REPORT', 'TI-RADS', 'VIS\_REPORT']

**步骤 5：**EXECUTE TI-RADS

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo

· 执行节点并写入字段：TI-RADS

**步骤 6：**EXECUTE VIS\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, reports.visual\_report

· 执行节点并写入字段：VIS\_REPORT

**步骤 7：**GENERATE\_REPORT

观察到/可用字段：state.thyroid\_size, state.thyroid\_echo, reports.visual\_report

· 报告校验：GENERATE\_REPORT validated: passed=True

· 警告：WARNING: TI-RADS: TI-RADS skipped: no discrete thyroid nodule.

· 警告：WARNING: VIS\_REPORT: No nodule: consider adding gland echo or diffuse evaluation.

✓ 该步骤后流程已完成。

## 警告摘要

⚠ WARNING: TI-RADS: TI-RADS skipped: no discrete thyroid nodule.

⚠ WARNING: VIS\_REPORT: No nodule: consider adding gland echo or diffuse evaluation.

## 简要点评

包含回滚策略，体现了对依赖污染的清理与重建。