

River Bend 1

1Q/2011 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2010

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to Plug a Main Condenser Tube in Accordance with an Approved Work Order

The inspectors reviewed a self-revealing finding for the licensee's failure to plug a main condenser tube in accordance with an approved work order. Specifically, a plastic tube plug was not replaced with the required brass plug causing a tube leak requiring the plant to reduce power. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2010-04526.

The performance deficiency was more than minor because it was associated with the human performance attribute of the Initiating Events Cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown, as well as power operations, in that the performance deficiency created a condition that upset plant stability by creating a condenser tube leak that prompted the plant to reduce power. The inspectors determined that the apparent cause of this finding was the licensee's failure to use human performance error-prevention techniques to ensure that the tube plugging was performed correctly. This finding therefore has a crosscutting aspect in the work practices component of the human performance area because the licensee did not communicate and use human error prevention techniques commensurate with the risk of the assigned task, such that work activities are performed safely [(H.4(a)].

Inspection Report# : [2010005](#) (*pdf*)

Significance:  Sep 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Maintain Licensed Operator Examination Integrity

The inspectors identified a noncited violation of 10 CFR Part 55.49, "Integrity of Examinations and Tests," for the failure of operations training personnel to ensure the integrity of an operating test administered to a licensed operations crew was maintained. One licensed operations crew received two scenarios for their operating test that had been previously administered to a licensed operations staff crew. This failure resulted in a compromise of examination integrity, but did not lead to an actual effect on the equitable and consistent administration of the examination. This finding has a crosscutting aspect in the area of human performance associated with decision making because the licensee did not use conservative assumptions when adopting a 50 percent operating examination overlap practice [H.1(b)].

The finding is more than minor because, if left uncorrected, the finding could have become more significant in that allowing untested licensed operators at the controls could be a precursor to a significant event if undetected performance deficiencies develop. The finding was determined to have very low safety significance (Green) because the finding resulted in a compromise of the integrity of operating test scenarios and compensatory actions were not immediately taken when the compromise should have been discovered. However, the equitable and consistent administration of the exam was not actually impacted by this compromise. The inspectors applied Inspection Manual Chapter 0609, "Significance Determination Process," Appendix I, "Licensed Operator Requalification Significance Determination Process," and determined that the finding should be dispositioned as a Green noncited violation.

Inspection Report# : [2010004](#) (*pdf*)

Mitigating Systems

Significance:  Dec 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Develop a Preventive Maintenance Schedule to Specify Inspection or Replacement of the O-Ring in the High Pressure Core Spray Lower Motor Bearing Drain Plug

The inspectors reviewed a self-revealing noncited violation of Technical Specification 5.4.1 for the licensee's failure to determine the appropriate preventive maintenance strategy and task frequency for the o-ring in the high pressure core spray lower motor bearing drain plug. As immediate correction action, the licensee replaced the o-ring. At the conclusion of the inspection, the licensee was in the process of determining the appropriate replacement frequency. The licensee entered this issue into their corrective action system as Condition Report CR-RBS-2010-05766.

This finding was more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern, in that if the licensee did not develop a preventive maintenance schedule for periodically replacing the subject o-ring, degradation of that o-ring due to aging could allow a leak that would drain oil from the lower motor bearing and thus render the high pressure core spray pump inoperable. As described in Inspection Manual 0609 Appendix A, a Phase 2 analysis using the presolved worksheet determined that this finding had very low (Green) risk significance. This finding has a crosscutting aspect in the operating experience component of the problem identification & resolution area because the licensee did not systematically collect, evaluate, and communicate to affected internal stakeholders in a timely manner relevant internal and external operating experience [P.2(a)].

Inspection Report# : [2010005](#) (*pdf*)

Significance:  Dec 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Two Examples of Completing Maintenance that Affected the Performance of Safety-Related Equipment but Was Not Properly Preplanned

The inspectors reviewed a two-example self-revealing green noncited violation of Technical Specification 5.4.1 for two occasions on which the licensee completed maintenance that affected the performance of safety-related equipment (high pressure core spray) but was not properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. As a result, the licensee overtorqued the high pressure core spray lower motor bearing drain plug causing the plug to fracture. This fracture resulted in excessive oil leakage that caused the pump to become inoperable. The violation is in the licensee's corrective action program as Condition Report CR-RBS-2011-00224.

These performance deficiencies were more than minor and therefore constituted a finding because they affected the equipment performance attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. As described in Inspection Manual 0609 Appendix A, a Phase 2 analysis using the presolved worksheet determined that this finding had very low risk significance. The finding has a crosscutting aspect in the resources component of the human performance area because the apparent cause of the finding was a procedure that was not adequate to assure nuclear safety [H.2(c)].

Inspection Report# : [2010005](#) (*pdf*)

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform Required Quality Control Inspections

Inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion X, "Inspection," for the failure to ensure that Quality Control verification inspections were consistently included and correctly specified in quality-affecting procedures and work instructions for construction-like work activities as required by the Quality Assurance Program. The licensee performed extensive reviews, and inspectors performed independent reviews of the licensee's conclusions as well as independent sampling, to confirm that improper or missed inspections did not actually affect the operability of plant equipment. Entergy initiated prompt fleet-wide corrective actions to ensure proper work order evaluation and proper inclusion of Quality Control verification inspections. This issue was entered into the corrective

action program under Condition Reports CR-HQN-2009-01184 and CR-HQN-2010-0013.

The failure to ensure that adequate Quality Control verification inspections were included in quality-affecting procedures and work instructions as required by the Quality Assurance Program was a performance deficiency. This programmatic deficiency was more than minor because, if left uncorrected, it could lead to a more significant safety concern in that the failure to check quality attributes could involve an actual impact to plant equipment. This issue affected the design control attribute of the Mitigating Systems Cornerstone because missed or improper quality control inspections during plant modifications could impact the availability, reliability, and capability of systems needed to respond to initiating events. This performance deficiency was determined to have very low safety significance in Phase 1 of the significance determination process since it was confirmed to involve a qualification deficiency that did not result in a loss of operability or functionality. The inspectors determined that this performance deficiency involved a crosscutting aspect related to the human performance area associated with decision making [H.1 (a)] because the licensee did not have an effective systematic process for obtaining interdisciplinary reviews of proposed work instructions to determine whether Quality Control verification inspections were appropriate. Inspection Report# : [2010005](#) (pdf)

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement the Experience and Qualification Requirements of the Quality Assurance Program

Inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion II, "Quality Assurance Program," for the failure to implement the experience and qualification requirements of the Quality Assurance Program. As a result, the licensee failed to ensure that an individual assigned to the position of Quality Assurance Manager met the qualification and experience requirements of ANSI/ANS 3.1-1978 as required by the Quality Assurance Program. Specifically, the individual assigned to be the responsible person for the licensee's overall implementation of the Quality Assurance Program did not have at least 1 year of nuclear plant experience in the overall implementation of the Quality Assurance Program within the quality assurance organization prior to assuming those responsibilities. This issue was entered into the corrective action program as Condition Report CR-HQN-2010-00386.

Failure to ensure that an individual assigned to the position Quality Assurance Manager met the qualification and experience requirements of ANSI/ANS 3.1-1978 as required by the Quality Assurance Program was a performance deficiency. This performance deficiency was determined to be more than minor because, if left uncorrected, it could create a more significant safety concern. Failure to have a fully qualified individual providing overall oversight to the Quality Assurance Program had the potential to affect all cornerstones, but this finding will be tracked under the Mitigating Systems Cornerstone as the area most likely to be impacted. The issue was not suitable for quantitative assessment using existing Significance Determination Process guidance, so it was determined to be of very low safety significance using Inspection Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria." The inspectors determined that there was no crosscutting aspect associated with this finding because this issue was not indicative of current performance because the violation occurred more than 3 years ago.

Inspection Report# : [2010005](#) (pdf)

Significance:  Sep 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate High Pressure Core Spray Pump Room Cooler Bearing Maintenance

A self-revealing, very low safety significance (Green) noncited violation 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings", was reviewed for the licensee's failure to prescribe lubrication and installation of bearings on the high-pressure core spray room cooler motors by adequate procedures. In response to this finding, the licensee changed their procedure for performing material equivalency evaluations to require that, when plant components change and associated vendor-recommended maintenance schedules change, licensee personnel also update the corresponding preventive-maintenance tasks. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2010-02919.

This finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability,

and capability of systems that respond to initiating events to prevent undesirable consequences, in that this finding caused inoperability of the high-pressure core spray. The significance of this finding was determined by completing a Phase 3 analysis in accordance with Inspection Manual Chapter 0609, Appendix A, which determined that the incremental core damage probability maximum was 2×10^{-7} , and that the finding was therefore of very low safety significance (Green). This finding did not represent current licensee performance and consequently did not have a cross-cutting aspect because the cause of this finding was that when the licensee replaced a component by a similar component from a different vendor, no licensee procedure required them to update the associated maintenance frequencies, and because before this finding was identified, the licensee had no reasonable opportunity to identify and correct that deficiency in that procedure.

Inspection Report# : [2010004](#) (pdf)

Significance:  Sep 30, 2010

Identified By: NRC

Item Type: FIN Finding

Inadequate Maintenance Results in Unplanned Opening of Main Turbine Bypass Valve

A self-revealing finding of very low safety significance (Green) was identified when turbine bypass valve number 1 opened unexpectedly causing the reactor to exceed 100 percent core thermal power. Operators promptly lowered core thermal power to 90 percent to preserve margin to fuel thermal limits. A failed power supply and inadequate calibration and testing of the steam bypass and pressure regulation system and electro-hydraulic control system caused the event. Corrective actions include replacing system power supplies and revising applicable calibration and test instructions. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2010-03343.

This finding was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, technical specification mitigation equipment (main turbine bypass system, end-of-cycle recirculation pump trip function, and rod block instrumentation functions) became inoperable. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the inspectors determined that the finding was of very low safety significance (Green) because the finding did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of nontechnical specification equipment; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that this finding did not represent current licensee performance because the preventative maintenance schedule and calibration procedure were developed and approved over two years ago. Therefore, no crosscutting aspect was assigned to this finding.

Inspection Report# : [2010004](#) (pdf)

Significance:  Jun 30, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Risk Assessment for High Pressure Core Spray Room Unit Cooler Maintenance

The inspectors identified a noncited violation of 10 CFR 50.65(a)(4) involving the licensee's failure to perform an adequate risk assessment while the high pressure core spray room unit cooler was unavailable. Specifically, the licensee assumed that risk would remain green and high pressure core spray would continue to inject into the reactor vessel for 6 hours after room cooling was made unavailable, when, in fact, risk became yellow because high pressure core spray would become unreliable after approximately 60 minutes due to instrument failure in the pump's minimum flow logic. As immediate corrective action, the licensee issued a standing order that administratively considered high pressure core spray unavailable when its room cooler is removed from service. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2010-02937.

This issue was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, "Significance Determination Process," Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," the finding is determined to have very low safety significance (Green) because the incremental core damage probability deficit for the affected time period is less than 1.0×10^{-6} and

because the licensee used incorrect risk assumptions that changed the outcome of their risk assessment. There is no crosscutting aspect associated with this violation because the assumptions that lead to the performance deficiency are not indicative of current licensee performance.

Inspection Report# : [2010003](#) (*pdf*)

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Procedure Results in Loss of Offsite Power to a 4160 Vac Safety Bus

A self-revealing noncited violation of Technical Specification 5.4.1.a. was identified for inadequate procedural guidance when surveillance testing the Division III diesel generator. This resulted in a loss of offsite power to the Division III 4160 volt alternating current (Vac) bus while starting a nonsafety-related load with the Division III emergency diesel generator at full power paralleled to the grid. To prevent isolating offsite power to any safety bus, the licensee issued procedure changes to prevent starting loads on the nonsafety-related buses connected to the divisional safety buses while the emergency diesel generators are in test. The licensee entered this issue into their corrective action program as Condition Report CR-RBS-2010-00910.

The finding was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone and affected the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609.04, Table 4a, the finding was determined to be of very low safety significance (Green) because the finding was not a design or qualification deficiency confirmed not to result in loss of operability or functionality, did not represent a loss of system safety function, did not represent actual loss of safety function of a single train for longer than its technical specification allowed outage time, did not represent an actual loss of safety function of one or more non-technical specification trains of equipment designated as risk significant, and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating event. There is no crosscutting aspect associated with this violation because this is a historical condition not previously identified by the licensee.

Inspection Report# : [2010003](#) (*pdf*)

Significance:  Jun 02, 2010

Identified By: NRC

Item Type: VIO Violation

Failure to Ensure at Least One Train of Equipment Necessary to Achieve Hot Shutdown Conditions is Free of Fire Damage

The team identified a cited violation of License Condition 2.C.(10), "Fire Protection," for failing to ensure that the Division 1 standby service water support system to the Division 1 emergency diesel generator, which was required to achieve safe shutdown, was protected such that it remained free from fire damage under all conditions. This condition was identified by the licensee in May 2007, and entered into their corrective action program as a significant non-conforming condition in CR-RBS-2007-02102. The licensee subsequently initiated compensatory measures in the form of manual actions to protect the Division 1 emergency diesel generator. This issue was documented as a licensee-identified noncited violation in Inspection Report 2009002. River Bend has subsequently completed two refueling outages, six forced outages, and one emergency diesel generator work window of sufficient duration since identification of this condition and failed to correct the non-conformance. The team determined that schedule changes resulted in a new completion date of January 2011.

The failure to ensure that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) was free of fire damage and to correct this significant non-conforming condition in a timely manner is a performance deficiency. This performance deficiency was more than minor because it was associated with the protection against external factors (fire) attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events in order to prevent undesirable consequences. The team evaluated this deficiency using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," because it affected fire protection defense-in-depth strategies involving post fire safe shutdown systems with plant-wide consequences. A Phase 3 SDP risk assessment was performed by a senior reactor analyst. The bounding change in conditional core damage frequency for a 1-year exposure is the Fire Mitigation Frequency (4.30E-08/year)

multiplied by the change in conditional core damage probability (0.9) for a value of 3.87E-08/year. This value indicates the finding has very low safety significance (Green). Because the licensee failed to correct this violation, this violation is being treated as a cited violation, consistent with the NRC Enforcement Policy. This finding had a crosscutting aspect in the Work Control component of the Human Performance area because the licensee did not appropriately plan work activities to support long-term equipment reliability by limiting temporary modifications, operator workarounds, safety systems unavailability, and reliance on manual actions [H.3(b)]. (Section 1R05.01)

Inspection Report# : [2010006](#) (pdf)

Significance:  Jun 02, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure Alternative Shutdown Procedure Could be Implemented as Written

The team identified a noncited violation of Technical Specification 5.4.1.d, "Fire Protection Program Implementation." Specifically, Procedure AOP-0031 "Shutdown from Outside the Main Control Room," Revision 307, had steps that could not be implemented as written. Two steps were to be performed before the necessary ac power was available, and two steps required diagnostic assessment without the availability of instrumentation.

The failure to ensure that Procedure AOP-0031, Revision 307 could be implemented as written is a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Attachment 2 to Appendix F, "Fire Protection Significance Determination Process," this issue was determined to be a safe shutdown finding, and was assigned a degradation rating of Low because the examples involved procedural deficiencies that could be compensated for by operator experience. Since this finding was assigned a low degradation rating, the safety significance screened as very low (Green). This finding was entered into the licensee's corrective action program as CR-RBS-2010-01592, CR-RBS-2010-01831, CR-RBS-2010-01775, CR-RBS-2010-01821, and CR-RBS-2010-1846. This finding had a crosscutting aspect in the Resources component of the Human Performance area, in that the licensee did not ensure that procedures were complete, accurate, and up to date to assure nuclear safety [H.2.(c)]. (Section 1R05.05.b.1)

Inspection Report# : [2010006](#) (pdf)

Significance:  Jun 02, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement and Maintain in Effect all Provisions of the Approved Fire Protection Program

The team identified a noncited violation of License Condition 2.C.(10), "Fire Protection," for the failure to implement and maintain in effect all provisions of the approved fire protection program. Specifically, the team identified, during a timed walkdown of the procedure that it took operators over 6 minutes to isolate feedwater, but the simulator showed that the steam lines could be flooded in 2 minutes. Overfilling the reactor pressure vessel and flooding the main steam lines could make reactor core isolation cooling unavailable. Reactor core isolation cooling was credited for decay heat removal and inventory control in the event of a fire.

The failure to ensure that feedwater would be isolated prior to overfilling the reactor pressure vessel and flooding the main steam lines making reactor core isolation cooling unavailable is a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated this finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," because it affected fire protection defense-in-depth strategies involving post fire safe shutdown systems with plant-wide consequences. A senior reactor analyst performed a Phase 3 evaluation to determine the risk significance of this finding since it involved a control room fire that led to control room abandonment. The Phase 3 evaluation determined that the finding had very low safety significance because a fire in only one of 109 electrical cabinets in the control room could result in this overflow event. The finding was entered into

the licensee's corrective action program as CR-RBS-2010-01808. The finding did not have a crosscutting aspect since it was not indicative of current performance, in that the licensee had established the incorrect response time more than three years prior to this finding. (Section 1R05.05.b.2)

Inspection Report# : [2010006](#) (*pdf*)

Significance:  Jun 02, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement and Maintain in Effect all Provisions of the Approved Fire Protection Program

The team identified a noncited violation of License Condition 2.C.(10), "Fire Protection," related to the licensee's failure to implement and maintain in effect all provisions of the approved fire protection program. Specifically, during testing required by the approved fire protection program the licensee failed to adequately test the remote shutdown emergency transfer switch functions used to assure isolation of safe shutdown equipment from the control room in the event of a control room evacuation due to fire. The switch functions had not been adequately tested since 1997.

The failure to ensure isolation from the control room for safe shutdown equipment controlled from the remote shutdown panel during surveillance testing of emergency transfer switches is a performance deficiency. The finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone in that it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated the finding using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," because it affected fire protection defense-in-depth strategies involving post fire safe shutdown. Using Appendix F, Attachment 2, "Degradation Rating Guidance Specific to Various Fire Protection Program Elements," the team determined that the finding constituted a low degradation of the safe shutdown area since the control room isolation feature was expected to display nearly the same level of effectiveness and reliability as it would had the degradation not been present. This finding screened as having very low safety significance (Green). This violation was entered into the licensee's corrective action program as CR-RBS-2010-01783. Because the emergency transfer switch surveillance procedures had been in effect since 1997, there was no crosscutting aspect associated with the violation, in that it is not indicative of current licensee performance. (Section 1R05.05.b.3)

Inspection Report# : [2010006](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance:  Jun 30, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Radiation Work Permit Instructions

NRC inspectors reviewed a self-revealing, noncited violation of Technical Specification 5.4.1 for failure to follow radiation work permit instructions. Specifically, a team technician made an unauthorized entry into a posted high radiation area on a radiation work permit that did not grant access to that area. The licensee conducted a review of this event and issued a site-wide memorandum on procedural and management expectations associated with high radiation areas. The licensee entered the finding into the corrective action program as Condition Report CR RBS-2009-03953.

The failure to follow the instructions on a radiation work permit is a performance deficiency. The performance

deficiency was more than minor because it affected the Occupational Radiation Safety Cornerstone. It is associated with the exposure control attribute in that a worker not following radiation work permit instructions does not ensure adequate protection of the worker's health and safety from additional/unintended personal exposure. Using the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Furthermore, the finding had an associated human performance crosscutting aspect in the work practices component because the worker did not use human error prevention techniques, such as self-checking [H.4(a)].
Inspection Report# : [2010003](#) (*pdf*)

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

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