COMMISSION BRIEFING SLIDES

# BRIEFING ON RESULTS OF REACTOR OVERSIGHT PROCESS INITIAL IMPLEMENTATION

JULY 20, 2001

# Results of Initial Implementation Reactor Oversight Process

## Commission Briefing
## July 20, 2001

# Introduction

- Background
- Feedback and self-assessment activities
- Results
- Lessons learned
- Resources
- N+1
- Conclusions

# Background

- **August 1998**
  - **Concept Development began**
- **November 1999**
  - **Six Month Pilot completed**
- **April 2000**
  - **ROP Initial Implementation began**
- **July 2001**
  - **Provided results of ROP Initial Implementation** (SECY-01-0114)

# Feedback and Self-assessment Activities

- Internal and External Feedback Activities
- Self-assessment Activities
- Oversight Activities
  - *IIEP*
  - *ACRS*

# Overall Results

- Exercised the process
- Improvement over previous process
- Has achieved Commission goals
- Consolidate gains and move forward

# Overall Results

## *Inspection Findings*

### *April 2000 to March 2001*

### *22 Findings (White or Greater) processed by SERP*

| Cornerstone | White | Yellow | Red |
|---|---|---|---|
| Initiating Event | | | 1 |
| Mitigating Systems | 6 | 3 | |
| Barrier Integrity | | | |
| Emergency Preparedness | 5 | | |
| Public Radiation Safety | 1 | | |
| Occupational Radiation Safety | 5 | | |
| Physical Protection | 1 | | |

# Overall Results

## *Performance Indicators*

### *January 2000 to March 2001*

| Cornerstone | White Threshold Crossed | Yellow Threshold Crossed |
|---|---|---|
| Initiating Events | 7 | - |
| Mitigating Systems | 21 | 1 |
| Emergency Preparedness | 6 | 1 |
| Barrier Integrity | 2 | 1 |
| Occupational Radiation Safety | 1 | - |
| Public Radiation Safety | - | - |
| Physical Protection | 4 | 1 |

# Overall Results

## *Plant Performance Summary*

### *April 2000 to March 2001*

| Action Matrix Column | Number of units |
|---|---|
| Licensee Response | 67 |
| Regulatory Response | 28 |
| Degraded Cornerstone | 5 |
| Multiple/Repetitive Degraded Cornerstones | 1 |
| Unacceptable Performance | None |

# FEEDBACK
## *Internal Stakeholders*

- **Generally positive**
  - Provides assurance plants are operated safely
  - Objective and risk informed
  - Improvement over previous process
- **Progress compared to 1999 survey**
- **Areas Warranting Continued Attention**
  - Ease of use of SDP
  - Timely handling of feedback

# FEEDBACK

## *External Stakeholders*

- **Majority generally positive**
  - Increased predictability of agency actions
  - More objective and understandable
- **Areas warranting attention:**
  - Performance Indicator refinement
  - SDP slow, complex, burdensome
- **Diverse Perspectives**
  - ROP step backward, poorly focused
  - ROP will not identify declining performers

# Self-Assessment Metrics

- **Process:**
  - Provide systematic approach to evaluating key aspects of ROP
  - Uses input from feedback, RPS, Audits
  - Results provided in quarterly updates & annual report
- **Results:**
  - More objective, risk-informed, understandable and predictable
  - More data/time required to assess remaining criteria
  - Current results were factored into ROP self-assessment
  - Process refinement is likely

# Lessons Learned:
# *Inspection Program*

- **Successes:**
  - **Identifies significant safety issues**
  - **Greater focus on risk important areas**
  - **Near 100% completion of the program**
- **Improvement Areas**
  - **Documenting basis for significance of findings**
  - **Significant changes to some inspection procedures (IPs)**
    - frequency, scope, level of effort
  - **Dealing with inspections/findings unrelated to risk**

# Lessons Learned:
# *Inspection Program*

- **Actions:**
  - Inspection Reports (IMC 0610*)
    - Continue evaluating and revising
    - Examples
  - Significant changes to some IPs
    - ISI, PI&R, MR
    - Physical Protection
    - ALARA
  - Evaluate the potential use of licensee self-assessments

# Lessons Learned:
# *Performance Indicators*

- **Successes:**
  - **Improved performance**
  - **Meaningful insights on performance**
  - **Fewer accuracy concerns than anticipated**
- **Improvement Areas**
  - **SCRAM and unplanned power changes**
  - **Safety System Unavailability**

# Lessons Learned:
# *Performance Indicators*

- **Actions:**
  - **Piloted replacement PI for SCRAM**
  - **Potential replacement for Unplanned Transients PI**
  - **Standard definition for SSU**

# Lessons Learned:
## *Significance Determination Process*

- **Successes:**
  - **Improved inspector awareness of plant specific risk**
  - **Focus agency and licensee resources**
  - **SRA program provided risk analysis support**
- **Improvement Areas**
  - **More timely assessment for findings greater than Green**

# Lessons Learned:
## *Significance Determination Process*

- **Improvement Areas (continued):**
  - **Complexity of SDP**
    - fire protection
    - reactor safety
    - safeguards
    - shutdown risk
    - containment SDP
  - **Benchmarking SDP Phase 2 Worksheets**

# Lessons Learned:
## *Significance Determination Process*

- **Actions:**
  - **Timeliness**
    - Fewer Phase 3 evaluations because of Phase 2 notebooks
    - Improve the Significance and Enforcement Review Panel (SERP) process
    - More realistic goals where applicable
  - **Complexity**
    - BNL developing Phase 2 for shutdown
    - New safeguards SDP
    - Improving tools for assessing fire scenarios
    - SDP instructional aids
  - **Benchmarking**
    - Continue to upgrade Phase 2 notebooks

# Lessons Learned:
## *Enforcement*

- **Successes:**
  - Actions more predictable
  - Actions not driving assessment
- **Improvement Areas:**
  - Timeliness and communicating results of SDP and enforcement process
  - Maintenance Rule issues
- **Actions:**
  - Make SDP more timely
  - Suspend MR panels

# Lessons Learned: *Assessment*

- **Successes:**
  - **NRC actions more predictable**
  - **Improved objectivity**
  - **Assessment meetings improve efficiency**
- **Improvement Areas:**
  - **Historical findings**
  - **No color findings**
  - **Dwell time for inspection findings**

# Lessons Learned: *Assessment*

- **Actions:**
  - Improve guidance regarding treatment of historical issues
  - Evaluate graded reset for inspection findings
  - Develop program modifications to address no color findings

# Resources
## *Overall Results*

- **Actual expenditures compare favorably with estimates**
- **Expenditures slightly greater than prior to initial implementation**
  - Actual expenditures for 52 weeks following start of initial implementation were slightly greater than 52 weeks prior
  - Comparisons are problematic

# Resources
## *Conclusions*

- Premature to implement further reductions
- Areas targeted for future efficiencies
  - elimination of start-up costs
  - implementation of quarterly inspection reports
  - SDP savings
  - identification of direct inspection activities that warrant reduced inspection
- Additional factors exist that may impact resource needs
  - institutional inefficiencies in implementing "N"
  - inefficiencies due to increases in vacancies filled at entry level
  - potential areas warranting additional resources (ISFSI)

# Transition from "N+1" to "N"

- **Agency has essentially transitioned to "N"**
  - Assistance provided to complete baseline inspections at multi-unit sites @ "N"
  - Potential challenges for unique sites
  - Overall impact on resident inspection program not fully known
    - Maintaining site coverage
    - Reduced opportunities for training and professional development

# Transition from "N+1" to "N"

- **Actions:**
  - Consider allocation of additional regional resources for unique multi-unit sites
  - Develop metrics to measure resident inspection program quality attributes

# Conclusions

- ROP has met goals established by the Commission
- Continue to address lessons learned from initial implementation
- Continue periodic self-assessments to identify areas for improvement
- Identify additional resource efficiencies


UNITED STATES NUCLEAR REGULATORY COMMISSION

# Industry Views on the Reactor Oversight Process

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NEI



## IIEP Process

- Effective vehicle for addressing divergent views and reaching consensus
- Constructive dialogue provided for sound recommendations
- Industry agrees with overall recommendations and conclusions

NEI

## Key Areas for Improvement

- Need for periodic assessment of program effectiveness
- Parity of significance of thresholds in PIs and SDPs
- Resolve inconsistencies among unavailability definitions
- Graded approach for resetting inspection findings in Action Matrix



## Key Areas for Improvement

- Consideration of licensee self assessments in inspection planning and scope of inspections
- Refine following SDPs
  - Fire Protection
  - Security
  - ALARA

## Conclusions

- First year of implementation exceeded expectations
- Program meets agency objectives
- Industry committed to making process work:
  - corrective action
  - self assessment
- Well defined process for further enhancements to program

**BEFORE THE UNITED STATES NUCLEAR REGULATORY COMMISSION**

**Briefing On Results Of Reactor Oversight Process (ROP) Initial Implementation Meetings**
**Commissioners Conference Room**

**One White Flint North**
**11555 Rockville Pike**
**Rockville, Maryland**

**Friday, July 20, 2001**

**Comments of Raymond Shadis, Initial Implementation Evaluation Panel Member, On Behalf of the New England Coalition on Nuclear Pollution**

## 1. Initial Implementation Evaluation Panel (IIEP) Participation

Following the first IIEP meeting in November 2001, Panel Member David Lochbaum of the Union of Concerned Scientists, resigned and NRC staff asked that I join the panel.

It was, in my opinion, both appropriate and serendipitous that a New England citizen-activist be asked to participate in the IIEP. Although I didn't know it at the onset, it is matter of record that 1995-1997 events at New England nuclear power stations, Millstone, Haddam Neck, and Maine Yankee, in particular, Maine Yankee, triggered the search for a new reactor oversight process. [1] It is a matter of personal record that these events eroded my confidence in NRC oversight to a bare trace. It has somewhat been restored by increased informal contact with well-meaning and professional individual members of the NRC. However, in my role as a safe energy and environmental advocate, I have little that I can pass on the general public to increase their confidence in NRC oversight.

On reviewing the eight established goals for the ROP[2], I found them a somewhat constrictive framework and, for my own assessment of the ROP, set them aside. Personalized and intuitive, my make or break question regarding the ROP came to be, "Will it prevent a repeat of events and revelations such as those experienced five years ago at Maine Yankee?" and "Will NRC be better able to identify problem plant?" This topic is elaborated in following sections of these comments.

The experience of serving on the IIEP was quite positive. NRC support staff was well informed, helpful, and solicitous of my needs. I found that fellow panel members were respectful of differing opinions and thoughtful in their responses. Even so, dropping one citizen activist into a

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[1] In Maine members of the public were not informed of the regulatory shake-up that resulted from 1995 allegations regarding loss-of-coolant analysis, or the 1996 Independent Safety Assessment (ISA). Chairman Shirley Jackson said of Millstone " NRC dropped the ball..." No such public admission was made to New England public, media, or state officials regarding Maine Yankee or Haddam Neck. At Maine Yankee and Haddam Neck, concerned citizens were drawn to focus on decommissioning and not the aftermath of revelations that led to shutdown. Thus few, if any, at these sites were following the new reactor oversight initiative, or aware of its origins.

[2] Maintaining safety, Increasing Public Confidence, Increasing effectiveness and efficiency, Reducing unnecessary regulatory burden, Objective, Risk-informed, Predictable, and Understandable. - ROP/IIEP Report, May 10, 2001, p.2

panel that is heavily weighted with seven senior NRC staff and five nuclear industry representatives,[3] all with an investment moving the ROP forward, cannot be said to be fair representation of public interest stakeholders. Achieving meaningful consensus in such a lop-sided grouping is certainly problematic.[4] Indeed, two of the IIEP's leading conclusions, that the ROP is a notable improvement and that the ROP should be continued, appeared foregone from the get-go.

To add to my understanding of the ROP, I attended NRC public informational meetings at Vermont Yankee and Millstone, the NRR Regulatory Information Conference, the ROP Lessons-Learned Workshop in Gaithersburg, Md., and a recent ROP Assessment Meeting at Seabrook.

The IIEP Report is an accurate reflection of the panel's work, conclusions, and recommendations. Moreover, it is my opinion that special care has been taken in the IIEP Report to acknowledge the concerns a full-range of stakeholders, both those who were panelists and those were sources for panel information[5].

Future evaluation panels should be more broadly inclusive. The dialogue would be enriched with the addition of more panelists from outside the NRC/licensee set, for example attorneys or academics with nuclear specialties. Dialogue in future panels would certainly be enriched with a more even gender mix

## 2. The Big Question: "Will the ROP prevent a repeat of events and revelations such as those experienced five years ago at Maine Yankee?"

Commissioner Greta Dicus articulated my fundamental concern about reactor oversight in a February 4, 1997 Commission Meeting on Maine Yankee. Maine Yankee had dropped from very high SALP scores to the Watch List and finally to permanent shutdown following the 1996 Independent Safety Assessment ISA[6].

> COMMISSIONER DICUS: ...if we were to pick a plant at random, a fairly good performer or average performer, and do the kind of look that we are doing at Maine Yankee and others, are we going to find similar problems?
>
> MR. MIRAGLIA (staff): I think the answer would have to be our expectation is that issues would be identified. It is the question of pervasiveness, degree, significance and these kind of things. The issues, I think it would be naive to say that we would not identify issues and problems. The regulatory program is a process and I think the context is that when these discrepancies, weaknesses, deficiencies are identified, they need to be looked at and examined as to what did they mean in and of themselves, what did they mean in the broader context for that facility and it is an ongoing, evolving type of process. The design basis reconstitution was an issue that was addressed and looked at by the Commission in '92. The policy statement was there. It has been a longstanding understanding that that's

[3] ROP/IIEP Report, May 10, 2001, Attachment 2, IIEP MEMBERS
[4] ROP/IIEP Report, May 10, 2001, pp. 6,7.
[5] (ROP/IIEP Report, May 10, 2001, Attachment 4, SOURCES of PANEL INFORMATION
[6] ISA is used more or less interchangeably with ISAT (Independent Safety Assessment Team) throughout NRC documents and correspondence.

licensee's responsibility. We need to go out and make sure they are fulfilling those responsibilities. I think the processes are in place. I think the 50.54(f) letter in that is part of our processes. So I think we are responding to what we find and I think we have to deal with these issues as they are identified in terms of number, significance and corrective actions as mandated by the regulatory process.

**"If we were to pick a plant at random, a fairly good performer or average performer, and do the kind of look that we are doing at Maine Yankee and others, are we going to find similar problems?"**

I believe a shorter, more direct answer to Commissioner Dicus' question, would have been, yes. That yes should have been punctuated by the following facts:

- The ISA opened up significant issues that had gone sliding through 24 years of NRC oversight.
- Although the ISA did an in depth examination of only four of Maine Yankee's thirty-some safety-related systems, numerous design defects, improper modifications, faulty engineering analysis, and 3200 overdue maintenance items were discovered.
- Within weeks of the NRC's declaration, following the ISA, that Maine Yankee was safe to operate, plant personnel surfaced additional safety significant defects that eventually led to permanent shutdown. Among them were lingering cable separation issues that the ISA had overlooked.

**Cable Separation at Maine Yankee**

The 1996 ISA team completely ignored the findings in a 1978 Fire Inspection Report in which NRC Engineer Peter James Atherton detailed the fact that, due to a lack of color-coding, labeling, local knowledge, or usable wiring schematics, cable separation at Maine Yankee was impossible to verify.

The ISA also missed the significance of four years (1992-1996) of Maine Yankee- NRC correspondence on unresolved cable separation issues.

Although the ISA team had opened and inspected cable trays, then pronounced them tidy, a walk down by plant personnel in December of 1996 resulted (as of January 17,1997) in requests to the plant's Engineering Assistance Group for the manufacture of approximately 3800 labels for cables, sleeves, and trays. Field walk downs by consultants of the Main Control Board and associated cable trays revealed that many cable trays were not identified in a way that allowed personnel to readily determine train affiliation.[1]

NRC spokesmen were at this time shredding any remnants of local public confidence by insisting that 1996-1997 cable separation problems were different than those reported by Atherton in 1978.

1 Conger and Elsea, January 1997, Root Causes of Cable separation Problems at Maine Yankee Atomic power Company, Plant Root Cause Evaluation Report No. 214

- The inspection process had failed at Maine Yankee and even an enhanced inspection failed to uncover significant defects when, presumably, they were staring a highly

trained inspection team in the face. If the ISA missed gross defects in the four systems they inspected, claims could hardly be justified about the condition of systems they did not inspect or, worse yet, plants that they did not inspect.

- Maine Yankee had been, by all previous measurement, an above average performer. No peculiarities were identified that would make Maine Yankee an isolated case.

Lacking basis to say that no similar problems would be found if other plants were examined as Maine Yankee had been, a conservative regulator or nuclear safety advocate would have to answer, yes, similar problems would be found...at least, until proven otherwise. It is unsettling to find that to this day not all NRC personnel agree that Maine Yankee's defects were anything extraordinary. In a recent conversation with an ISA team member, I was told regarding cable separation that, " All those old plants were like that."

Cable separation was examined at Vermont Yankee as a follow-up to the Maine Yankee issue. No systemic problems were found. This year, Vermont Yankee workers caused a short-circuit resulting in a plant trip while changing a light bulb in control room instrument panel indicating to this observer potential instrumentation and control separation issues. NRC ranked this of very low safety significance.

In as much as the New England experience demonstrated that numerous serious safety defects could remain hidden in nuclear plants that had been well-regarded by NRC, it is a tribute to NRC and industry public relations that communities at every reactor site in the country did not promptly demand similar major team inspections.

Did NRC then undertake a series of trial in-depth examinations that would answer Commissioner Dicus' question? NRC did not.

As documented in NRC Meeting transcripts, Memoranda, SECY papers, and the like, between 1997 and 1999, NRC moved to construct a risk-informed and objective oversight process while relying on licenses to reconcile design bases and establish plant specific Probabilistic Risk Assessments. All to the good, but various indicators have caused me to wonder if design bases are being given short shrift.

**3. Do we really know and understand the machines we operate and regulate?**

- At the 2000 Regulatory Information Conference, an NRC staff presenter outlined NRC's refined attitude toward the individual Final Safety Analysis Reports. He stated that the FSAR is a reference document...like an encyclopedia or a dictionary, and as such would not be expected to contain every last detail. This appeared to be a step back from the Confirmatory Action Letter, now several years old, and the subsequent, "amnesty" requiring accurate documentation of modifications and as found conditions. We had always thought the FSAR an important licensing document, which was to accurately reflect the physical plant and its operation together with any modifications.
- NRC has phased out, actually has fiscally starved out, its Diagnostic Evaluation Team Program.
- NUREG-1275, Volume 4, "Causes and Significance of Design Basis Issues (DBIs) at U.S. Nuclear Power Plants," makes it clear that the number of design basis issues discovered in any given period is closely tied to the number of engineering (and design) inspection hours expended. However, the staff has yet to sort out and compile the number of engineering

inspection hours for the first year of the ROP. This may indicate that the staff is no longer focused on discovering DBIs through engineering inspection.

- Some licensees may not yet believe that having, understanding, and using readily accessible and detailed information about plant configuration is important. Earlier this year, workers at Millstone replaced a faulty plug-in circuit module on one component without realizing that it would activate controls on separate but nearby components. Although the information was available elsewhere at the facility, the schematic sheet that they were using did not reveal the interconnection. This was rated of very, low safety significance.
- Recently at the Monticello plant it was discovered that shipping bolts on bellows that are a design feature of containment had been left in place incapacitating the bellows for more than two decades.

**4. What does the public have a right to expect from NRC oversight?**

The message that the organization I represent carries to the public is that the public has been offered a social contract by NRC, its predecessor agency, and the nuclear industry. As a result they have a right to expect the standard of regulation, operation, and participation in informed decision making that the public was promised when the current generation of nuclear power plants were deployed.

To meet that expectation requires at least the following:

- NRC must demonstrate that it is an independent, impartial, and vigorous enforcer of protective regulations,

- Past assurances regarding nuclear power safety must be demonstrated to be intact, or at least not being discarded without good reasons that are articulated widely, loudly, and clearly. These would include such prescriptive concepts as redundancy and defense-in-depth. Engineering conservation and other safety margins once established must not be reduced or depleted.

- Each nuclear plant must be proven to be properly and conservatively designed, built to design specifications, modified only with appropriate analysis, well maintained with due consideration of aging materials and components, and operated only the highest professional standards.

**5. Public Confidence, Safety Significance, and the Language Barrier**

Time and again during the meetings of the IIEP and in other NRC meetings, I heard it said that gaining public confidence was largely a matter of effectively communicating the facts in a form (simplified) that the public can understand. I believe this view to be patronizing, egocentric, and finally, self-defeating.

In an essay on the Method of Science, Albert Einstein said,

> The whole of science is nothing more than a refinement of everyday thinking.

If NRC constantly reinvents language, redefining common terms, serving acronym soup, and salting its speech with neologisms, it cannot hope to clearly communicate a proposition to the public. In addition, communication connotes a two-way, at least a two way stream of thought. Communication is shared thought. Many of NRC's actions and pronouncements simply defy

common sense or cold logic. For example, if you lived in a dangerous neighborhood with an apartment full of valuables, would leaving the entrance door unlocked and ajar in the night have any safety significance? At Millstone, when a security gate failed to close because of weather conditions, the event was deem to be of very low safety significance because no terrorist happened to stroll on in.

When Seabrook's offsite power was knocked out during a March blizzard, and an aux. feed water pump malfunctioned, and they had a turbine overspeed, there happened to be twenty inches of wet snow on the ground. At that point, the confidence of near-by residents would have been interesting to gauge. The storm, forestalling any chance of evacuation even to shelter, they certainly would, at the moment, not have agreed with NRC's assessment that events at the plant were of very low safety significance.

The public, except perhaps for teenagers, will not follow the logic that says because of chance or mere happenstance, component failure during testing or during an outage instead of online, for example, an event is rated of low safety significance. That a tire blew out in the parking lot and not on the highway is not reason to dismiss the event as safety insignificant.

Enhancing public confidence requires that NRC be consistent in its statements (or that the public suffer amnesia). Auxiliary feedwater pump failures at Millstone, VC Summer, and Seabrook were graded , after some conversation, of low safety significance.

But compare that to following transcript excerpt from an October 18, 1996 Commission Briefing:

> **Independent Safety Assessment Team (Maine Yankee) Leader, Ellis Mershoff:**
> " ...we took a real hard look...at the reliability of equipment...is it available or in maintenance? And if it is available and called on to start, will it start? If it starts, will it run its mission time? And we used plant performance data to establish those conditions and we found that the **auxiliary steam-driven feedwater pump** was quite poor, down around 76 percent (reliable), when 91 percent was the assumed number..."
> **Commissioner Nils Diaz:** " Excuse me. **That is a very safety significant component, isn't it?**
> **Mr. Merschoff:** "Yes, sir."
> **Commissioner Diaz:** " **Very, very?"**
> **Mr. Merschoff:** " **Yes."**

Commissioner Diaz later explains that under accident conditions the auxiliary feedwater pump may be **"the last line of defense".**

In plain English, which is it? And why?

**6. Actions speak louder than words.**

NRC has made an extraordinary effort over the last few years to make certain that all stakeholders are heard from and the agency is increasingly making efforts to demonstrate that those voices not only have been heard from, but been, heard.
However, activists see NRC's efforts at regulatory reform as a one way, wrong way street to less rigorous oversight, less definitive regulation, and less protective regulation. The long list of such

'reforms' reaches out to taint any perspective that the public interest community may take of the ROP.

Activists do not share NRC's apparent enthusiasms over recently improved reactor operating data and certainly not to the extent that NRC should be planning to cut back on inspection hours. When I recently told an NRC Branch Chief that the sea of green in the ROP reportage might be taken as a sign the industry was becoming self-regulating, he said, " Well, that's what we want, isn't it?"

NO, It is not, for two reasons:

1 It is not part of the public's contract with NRC.
2 We depend on the diligence and professionalism of the industry first, as does NRC. However, effective oversight must remain in place to capture mistakes and prevent licensees from becoming deluded as to the condition of the plant and their operations. Just five years ago, and five years is not a very long time, most of the staff at Maine Yankee thought they had a world-class plant and that they were operating to the best of standards.

**7. Conclusion**

The most telling statement in both the Staff and the IIEP reports may be that it is still too early to tell if the ROP will accomplish all of its goals and objectives. In the meantime, I believe the Commissioner's question still needs to be convincingly answered by the NRC staff:

**"If we were to pick a plant at random, a fairly good performer or average performer, and do the kind of look that we are doing at Maine Yankee and others, are we going to find similar problems?"**

Respectfully Submitted,

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