

88426



U.S. Department
of Transportation

Memorandum

Federal Aviation
Administration

Commercial Space Transportation

Subject: New Mexico Office of Space
Commercialization Presentation
Presentation to FAA/AST

Date: June 30, 2000

From: General Engineer, AST-200

Reply to R. Maday
Attn of: (202) 267-9051

To: Docket No. FAA-1999-5535-27

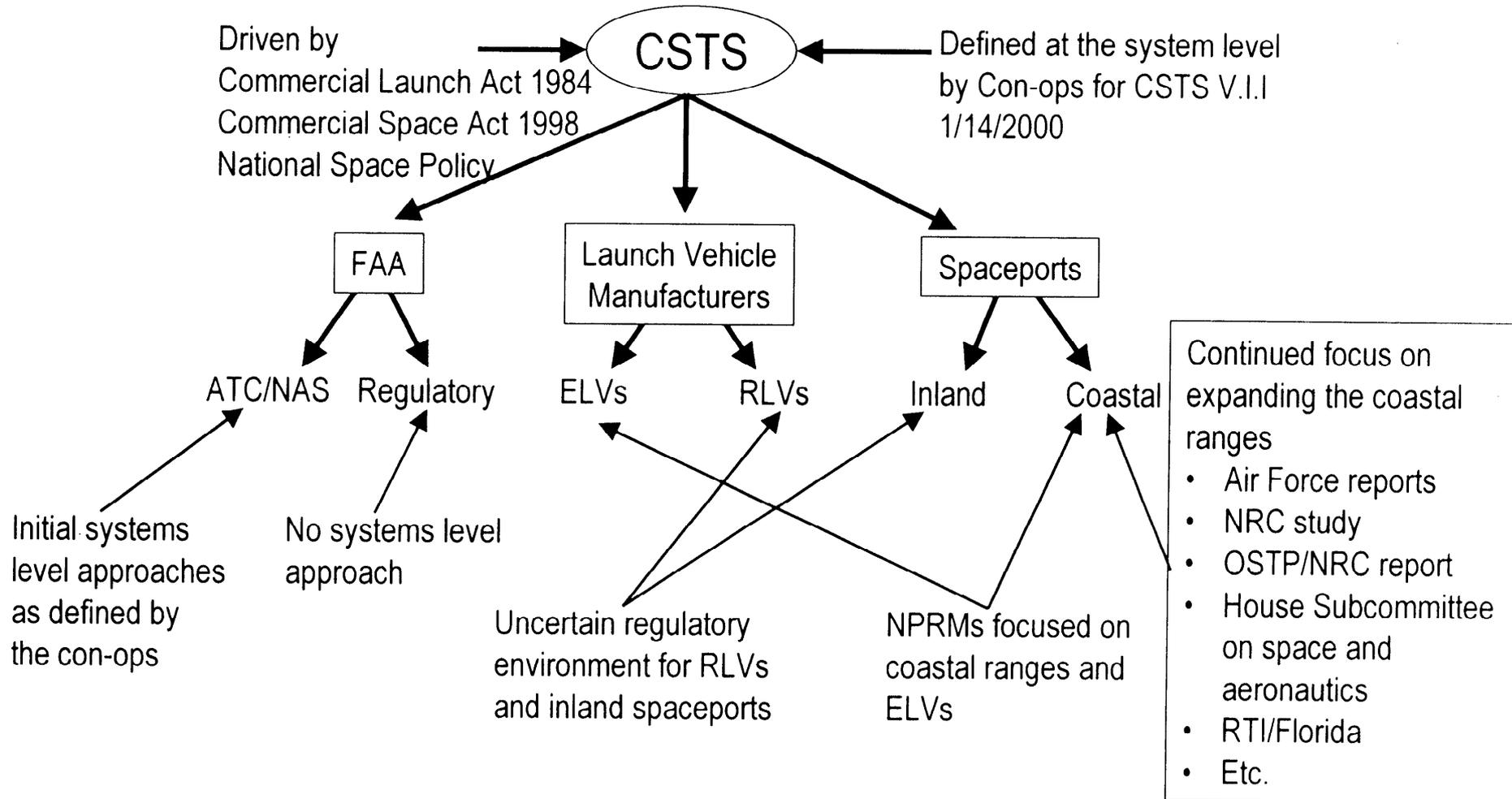
On June 29, 2000, the New Mexico Office of Space Commercialization gave a presentation to the office of the Associate Administrator for Commercial Space Transportation in Washington, DC. Numerous topic areas were discussed. Those areas relating to 14 CFR Parts 400, 401, 404, 405, 406, 413, 415, 431, 433 and 435, Commercial Space transportation Reusable Launch vehicle and Reentry Licensing Regulations; Proposed Rule are being submitted to Docket No. FAA-1999-5535.

Randal Maday

OFFICE OF THE
CHIEF COUNSEL
FAA'S DISTRICT
2000 JUL 12 P 3:45



Commercial Space Transportation System Factors Influencing CSTS Evolution





Commercial Space Transportation System Horizontal Integration



- There is no horizontal integration of the CSTS
- Why? - Internal factors
 - ATC/NAS ops plan based on systems approach per con-ops but NPRMS are not based on a systems approach
 - NPRMS and RLV manufacturers are not in agreement
 - NPRMS and inland spaceports not in agreement
- Why? - External factors
 - Political process focused on existing Air Force ranges
 - Most organizations and institutions are comfortable with the old and well understood approach and very uncomfortable with the new and innovative approach.



New Mexico's Relationship to the CSTS As It Currently Exists

CSTS Element	Relationship with New Mexico's Spaceport	Remarks
FAA ATC/NAS Ops NPRMs Con-ops	 ● ● ●	 WSMR already does or has the capability to do all that is necessary to integrate the SRS into the CSTS ATC/NAS The "old approach" embodied in the NPRMs may stop the New Mexico Spaceport The con-ops systems approach is logical, comprehensive, and most supportive of New Mexico's direction
Launch vehicles and manufacturers ELVs RLVs	 ●	 N/A New Mexico has a good working relationship with RLV manufacturers. Economic factors favor NM as an RLV launch site. WSMR has all necessary range support capability. NM and RLV manufacturers are in close technical agreement
Spaceports Inland Coastal	 ○ 	 New Mexico's SRS is the prototype for inland spaceports. If NM's SRS is stopped by the NPRMs, no inland spaceports are likely to be built N/A



New Mexico's Spaceport ● and the NPRMS

- General observations
- Some specific issues
- Overarching concerns



New Mexico's Spaceport and the NPRMS

- General observations
 - New Mexico and RLV manufacturers are in agreement with respect to the NPRMs
 - NPRMs do an excellent job of addressing ELVs
 - NPRMs do an excellent job of addressing coastal spaceports existing on federal ranges
 - ELV approach applied to RLVs
 - Unique capabilities of RLVs not considered
 - Inland ranges addressed as if they were coastal ranges
 - The technical process, by which the NPRMs were written, appears to have had little or no inland range and overland flight expertise



New Mexico's Spaceport and the NPRMS

NPRM	Coastal Spaceports	Inland Spaceports	RLVs	ETVs
Launch operations, federal launch site	●	○	○	●
Financial responsibility for licensed launch activities	●	○	○	●
Operation of a non-federal launch site	●	●	●	●
RLVs and reentry	○	●	●	
Licensing and safety requirements for operation of a launch site	●	●	●	●
Financial responsibility, reentry	○	○	●	○



Some Specific Concerns Relative to NPRMs and Inland Spaceports

- RLV failure probability per *Draft Interim Safety Guidance for Reusable Launch Vehicles* - 1/4/99, p. 20

$$P_f = 1.0$$



Some Specific Concerns Relative to NPRMs and Inland Spaceports

- Why?
 - *Draft Interim Safety Guidance for RLVs* (1/4/99 Attachment 1, p. 1) states that P_f is always a fraction between 0 and 1 (but not 1.0)
 - Reliability data for the only existing RLV, the Space Shuttle, demonstrate a P_f of 0.01
 - Reliability data for ELVs (similar hardware and software) demonstrate a P_f of 0.02 to 0.06 (average=0.04) depending on the data set
 - *Licensing and Safety Requirements for Operating of a Launch Site* (p. 139) states “the FAA proposes for launch site location analysis to assign a failure probability of (P_f) constant of $P_f = 0.10$ for guided launch vehicles. ... This represents a conservative estimate of the failure percentage of current launch vehicles, since many current launch vehicles are more reliable.”



Overarching Concerns

- An NPRM that specifically addresses RLVs at inland spaceports is needed
 - Must have input from organizations with expertise in overland flight operations
 - Can be conservative, but must be realistic in its analytical approach

SOUTHWEST
REGIONAL
SPACEPORT

Mtg.

6/29/00

Nikos Himaras	AST-100	(202) 267-7926	nick.himaras@faa.gov
GARY MICHEL	AGC-250	(202) 267-3148	GARY.MICHEL@FAA.GOV
CAROLE FLORES	AST-200	(202) 267-8353	Carole.flores@faa.gov
Ron Gress	AST-200	(202) 267-7985	ron.gress@faa.gov
JOSEPH HAWKINS	AST-2	(202) 267-7111	jr.hawkins@faa.gov
Lonnie Sumpter	NMOSC/GKC	(505) 382-8519	Lrockete@jans.greatwhite
Bill Gutman	NMOSC/PSL	505-521-9573	gutman@psl.nmsu.edu
HERB BACHNER	AST-100	(202) 267-7859	herbert.bachner@faa.gov
Randy Maday	AST-200	202-867-9051	randal.maday@faa.gov
Bernie McCune	NMOSC/PSL	(505) 522-9323	bernie@psl.nmsu.edu
Susan Dauler	NMOSC	" 521-3401	sdauler@edd.johnm.us
Esta Rosenberg	FAA/AGC	(202) 366-9320	esta.rosenberg@ cst.dot.gov
HANSON SCOTT	NMOSC (500)	213407	hanson@edd.state. nm.us
Chuck Larsen	AST-100	(202) 267-7908	chuck.larsen@faa.gov
STEVE ROSEMAN	FAA/ATA-200	202-267-9245	steve.roseman@faa.gov
JACK BERTRON	AFS-410	202-267-7303	JACK.R.BERTRON@FAA. GOV
Kelvin Coleman	FAA/AST-100	202 267-7972	kelvin.coleman@faa- gov