and the second second							V																																		£	ory
		;	SC II. & GAS	PUC	SFM	-	COLUMBI									SLLIS							HRE			LINA			<u>¥</u>	_	e.	LINA					7	ΙΑ		out Hell	ütiatives	ates with Subcateg
State Pipeline Safety Initiatives that	ALABAMA	NA.	ARKANSAS PSC ARKANSAS OIL	CALIFORNIA PI	CALIFORNIA SFN	COLORADO	DISTRICT OF COL	DELAWARE	DA DA		SIC		S	UISIANA	69	AARYLAND AASSACHUSETT	ICHIGAN	#INNESOTA	SSIPPI	IONTANA	IEBRASKA	PΑ	IEW HAMPSHI IEW JERSEY	EW MEXICO	IEW YORK	IORTH CAROLI IORTH DAKOTA		КГАНОМА)REGON PENNSYLVANIA	UERTO RICO	RHODE ISLAND	SOUTH CAROLIN SOUTH DAKOTA	TENNESSEE	'	JTAH JERMONT	VIRCINIA	WASHINGTON	WESTVIRGIN	WISCONSIN	-	Number of In Subcategory	imber of Statitizatives in
Exceed Federal Code	LAB,	RIZONA	RKA	ALIF	ALIF	ONN	ISTR	ELA	FLORIDA	DAHO	LLINOIS)WA	ANSAS	OUIS	IAINE	IARY IASS/	ECE	IINN	ISSI	INO	EBR	IEVADA	EW] EW]	EW I	EW	ORT	онно	KLA	OREGON PENNSYLA	UER	НОБ		ENN	EXAS	TAH	Jai	/ASH	/EST	/ISC	Í	nmp npca	umb
Number of State Initiatives			< <									_		2 2		22	- 2	30			~ ,	~ .	~ ~	Z	~	~ ~	0	-	U					_			_	_			2 0 477	ZE
Enhanced Reporting	27 (0.0	,,,	50		0 00			10 10	, ,		10		, ,	70 1			00	0 70	1-1	'	- 12	00	0 .		, ,	10		, 1,	-		, ,		-	0 0	- 00	7.0				329	
Incident reporting criteria - lower property damage threshold	2	2 .	1	1			1		1			1					1		1			1 1	1	1	1			1 -	1	\vdash	1 .	1			1	1	1			_	23	21
Incident reporting criteria - <30 day reporting, supplemental incident reports specified within required timeframe		_		Ť		1 1	2		1 2			i		2	1		Ċ		1	П	1	1	1				2	1			•					Ţ,	2		1		20	15
Incident reporting criteria - significant media coverage	2	1		1							1							1				1	1		1												1				10	9
Incident reporting criteria - bodily injury includes outpatient treatment, specified interruption of gas is "service failure" and is considered an incident		1	1																																						2	2
Expanded Incident reporting criteria - includes any pipeline > 100 ppm H2S; any carbon monoxide related events, over pressuring pipeline, fire not caused by operator, transmission shutdown, failure to serve master meter ops, > 5 gallons release of Haz liquid, gathering lines in Class 1 or rural areas		6	1	1				1						1			1				1				1									1			1				15	10
Additional reporting rqmts - non-incident including: safety related conditions, 3rd party damage reporting, unplanned interruptions, building evacuations, major main failures, transmission failures, list of master meter operators served, suspicious acts, status of condition of pipe and shared with municipalities served, annual organizational chart, annual report for master meters, report of any unplanned gas ignition, outages at public facilities, security breaches, curtailment plans, LPG systems in public places and serving >10 Units, calculations to determine LAUF gas annually, emergency plans must identify Mutual Assistance Agreements, proxmity of pipelines to schools, report on customer meter surveillance program		2	1 1	5	2 2	2 2					1 2		2		3	1	1	2	1 2		3	1 7	, 5	3	1		1	1	1				1	1	1	2	8		2	2	68	31
Require reports of outages of >specified number of customers, require report for > specified outage durations, Pressure Complaints (too low/too high)	2			1		1			1		1 1	1	2	2	2			1			1 .	1 2	2 2		1 1				1 1		1	1	1				1		1 1		29	24
Periodic leak status reports			1	1		2									2				1	П		3	3 1											1		2					14	9
Inspection Progress Reports for Regulator Stations, Emergency Valves, Intrastate Pipeline Valve Location Plan, Franchise Area Map, Interstate Pipeline Location Plan				1											1						1				1																4	4
Cast Iron/Bare Steel Replacement Reporting						1							1					1	1			1	1																		6	6
Plastic pipe inventory, Plastic failure reporting, Construction Defect Failure Reporting	Ш														1			1				1					1										1				5	5
Electronic Access to Most Current O&M, Procedures, OQ											1	ш	_					1		\perp	1	1																_			4	4
Operation & Maintenance Plans must be filed/approved	1	1 '	1	\blacksquare	_	1	1	_			1 1	\square	1	4	1	4_	1	1	1	+	_	1	1	1	1			_		ш		1			_	1	1	1	1	4	21	21
Emergency Response Plans must be filed/approved	1	1				1					1	ш	1		1	3		1	1	\perp	1	1	1		1							1					1		1		18	16
Public Awareness Plans must be filed/approved	ш	_				4		_				ш		4	1				1	$\perp \perp$		1								ш				_		1		_			4	4
Operator Qualification Plan must be filed/approved	\perp	_		Ш								\perp			1				1	\bot		1								\sqcup						2				\bot	5	4
Quality Assurance Plan must be filed/approved	\Box				_										1	-			1	$\perp \perp$		1								\vdash										4	2	2
Integrity Management Plan must be filed/approved					1				_			ш			1				1	\perp		1												1					_	4_	5	5
Construction Standards must be filed/approved	Н	4			_		Ц	4	1			\blacksquare			1	\perp		1	1	\Box	_									ш		_			_		1				5	5
Damage Prevention Plan must be filed/approved Provide Contact List for emergencies to Safety Inspectors, for resolving and providing situational awareness regarding service Interruptions, OP IDs required for non utilities			1				1								1	1 1		1	1		1	1			1		1		1			1	1		1		1				3	3
situational awareness regarding service interruptions, Or 105 required for non utilities Reporting of Response Times Emergency/Odor Complaints/Leaks, insufficient odorization level, EFV actuations	T						-						1		1			1	1			3	1		1		1				1		-								10	1 4
Annual Report for Operation and Maintenance Activity Hours,												\Box			Ė				T.			1									1									+	1	1
Pressure Test (Strength Test) Report with Certification of Pipeline, comprehensive implementation plan for all segments that were not previously tested				1																		1	1																		3	3
Any record of required tests, summaries that Commission requests, Annual Reporting of Lis of Welders and Certification of Welders	it					1					1												1									1									4	4
Requires notification of change of ownership, merger, acquisition	П			П		2				П								1		П		1	1					1		П			П				П				6	5
Projects, Extensions, Improvements to Capital of Gas Utility, LNG Facility Construction, filing of construction manuals, drug and alcohol plans		1	1	2							1		1	2		1		1	1 2			2	2 1		1 1				1					2		1	2		2 2	2	28	20

) Sel	ARKANSAS UL & GAS	IA PUC	CALIFORNIA SFM	cur	OF COLUMBIA	ш						,	_	Q	SETTS		<u>د</u> .				PSHIRE	SY.	00		ROLINA		А		ANIA	AND	ROLINA	KOTA	E				TON	SINIA	z		Number of Intitiatives in Subcategory	States with s in Subcategory
State Pipeline Safety Initiatives that	ALABAMA	ARIZONA ARKANSAS PSC	ANSAS	IFORN	IFORN	NECTI	rrict (DELAWARE	LORIDA	EORGIA	LINOIS	IANA	KANSAS	KENTUCKY	OUISIANA	YLAN	MASSACHUSI	MICHIGAN	MINNESOTA	SOURI	MONTANA	KASKA	NEVADA NEW HAMI	NEW JERSEY	/ MEXI	NEW YORK	NORTH CAROLII NORTH DAKOTA	OIH	кганома	REGON	SNNSYLVAN	HODE ISL	UTH CAR	TH DA	ENNESSE	AS H	MONT	SINIA	SHING	TVIR	CONSI	YOMING	iber of	Number of Stantitizatives in
Exceed Federal Code				CAL	CAL	CON	DIST		<u> </u>	5 ⊟	≓	2 5			_ <						MON	NE B							5	5	<u>a</u>	₹ 2	S	S		TEXAS		VIRC	WAS	WES	3	≥		Num
Number of State Initiatives	17 3	34 51	1 5	50	12 1	0 38	19	5 4	48 1	3 5	17	22 1	3 66	8	8 70	6 12	54	71	30 6	73	2 1	1 8	126	85	8 7	72 1	7 0	15	8	9 :	17 (21	19	0 :	11 5	2 0	8	63	70	5	75 1	.2	1477	
More Direct Oversight																																					Ш				_	\perp	92	
Definition of Operator Expanded includes: pipeline operators that contain >100 ppm H2S, H2S operators must use NACE Standard MR-0175-99 and API RP55-95.		1 1																																									2	2
More direct oversight of construction activities (or reports to allow same) requires field audits of OQ construction activities	1				1	1 1				1			1		1	1			1				1	3	1		1	1	1		1	1	1		1			1	1	2			24	21
Definitions expanded for "transport", "persons", "operator", "master meter", "state", "distribution system", "LPG distribution system", "low pressure distribution system", "master meter system" "Corrosion", "Customer", "Hoop stress," "Leak", "Leakage survey", "Pressure", "Sour gas," "System", "Vault" "Refeet line" "high pressure distribution", 'yard line", "CGI", "sustained reading", "follow up inspection", "private line", "major project", "roadway", "production facility" "significant event" "leak repair rate"		1 1		1	1	1				1							1	1		1															2	2							10	9
Requires Lab Exams for Investigating Failures, Cooperation for Investigations Required		1																									1																2	2
More direct oversight of testing (>100 psi) (or reports to allow same)																								1		1													1				3	3
Certificate Required for Operations or Certain New Construction, requires HDD guidelines within O&M, HDD window excavations for plastic pipelines, HDD profile required if>125 psig		2																				1	ı	4									1			1							9	5
Emergency Procedures must recognize sour gas safety precautions including educating public, Emergency Program requires annual meeting with Emergency Responders on Emergency Procedure, stakeholder group informed of NPMS usage, requires use of ICS for emergency programs				3	1													2																		1							7	4
Require Inspections of outside construction crews (quality assurance), requires quality assurance plan, Limits span of control for oversight of outside contractors crews, Notice to State Safety Staff of consultants doing routine work to allow closer oversight, Visual Weld Inspectors must be previously identified in writing, Service Lines install by external contractors must be certified to meet State Requirments, strict enforcement of farm tap maintenance		2	2			1	1		1				2		1				1	2			4	2																			17	10
Amendments of OQ, O&M plans required after incidents, AOC discovered, emergency repairs made, require OQ and O&M plans on sight during construction, O&M must include any recommendation of state regulator, soft off requirements, management of change, conduct 3rd party audit, centralized maintenance tracking, require quality assurance but not reporting				1	1	1	1					1	l		1									2														2	5				14	8
Advisory Bulletins must be incorporated into action plans, reduction program for LAUF gas annually, Conversion procedures required from non regulated to regulated operator, Requires LAUF for more than 10K customers as factor for replacement criteria									1				1																		1												4	4
Valves	Ħ			П							П		Ť																		Ť						П						51	
Valve Box Criteria (accessiblity,non transmittal of external loads, free of debris)															2	2	2						1														П				1		6	4
Blow-down valve requirements for mains, Sectionalizing block valves requirement for sour gas pipelines, Bypass Valves must be sealed and locked									1									1																							1		3	3
Emergency Valves must be accessible at all times, repair requirements of inoperable valves									1						1					1			2																				5	4
Emergency valve program, selection criterion for service valves, selection criterion for critical valves, enhanced inspection, annual drill on operating emergency valves, emergency valves inspected every 6 months for sour gas, specified design requirements for sour gas, valve program for airports, notification of valve quantity variance									1				2		1			2		1			5	3		2													2				19	9
Buried Curb Valves required on all high pressure service lines at places of public assembly, installation of curb valve when repair excavation is made																	2							1		1																	4	3
Curb Valves must be inspected annually at places of assembly, public assembly places require outside valve, Non Emergency Valves must be inspected every 5 years															1											1											1				1		4	4
Service shut-off valve criteria, Check valve required for certain services	П			П			П	\bot	1		П	1		П			1	1			Ш				П	1			Ш	\Box	\bot			П	\Box		Ц		1	\Box	1		7	7
Periodic service must include partial stroke																		1	1	1																							3	3

State Pipeline Safety Initiatives that	ALABAMA	ARIZONA ARKANSAS PSC	ARKANSAS OIL & GAS	CALIFORNIA PUC	CALIFORNIA SFM COLORADO	CONNECTICUT	DISTRICT OF COLUMBIA	V	SIA) SIG	NA	•	KENTUCKY	OUISIANA	AAINE AARVIAND	MASSACHUSETTS	MICHIGAN	MINNESOTA	SIPPI	MONTANA	ASKA	NEVADA NEW HAMPSHIRE	NEW JERSEY	NEW MEXICO	CABOTINA	NORTH DAKOTA		КГАНОМА	EGON NNSYLVANIA	ERTO RICO	ODE ISLAND	UTH CAROLINA	1 DAKO LA ESSEE			INO	INGTON	STVIRGINIA	VISCONSIN	 er of Intitatives in tegory	Number of States with Intitiatives in Subcategory
Exceed Federal Code	LAB/	ARIZONA ARKANSA:	RKA	ALIF	ALIF OLOI	NNO	ISTR	FLORIDA	GEORGIA	DAHO	NDIANA	IOWA	ENT	OUIS	MAINE	ASS/	ICHI	NN		ONT	EBR.	NEVADA NFW HAM	EW.J	EW		ORT	OHIO	KLAI	OREGON PENNSYLY	UER	нор	TIDO	ENNI	EXAS	JTAH JFRM	EKMONI	/ASH	ÆST	7ISCC	umb abca	umb
Number of State Initiatives		4 4 34 51	_ `		ວ່ວ 12 10	38	19 5		13						76 12			30				2 2 3 126		8 72				_		0	≃ 21 1	19 (11			3 63	70	5	75 1	 2 5 477	2.5
Pressure Testing	-, ,	01			10	00	27 0	10	10	U 1.		10 0	0 0	0 /	, 0 11		, _		,,,	Ť	\		, 00	0		Ť	10		, 1,					-	0 0	00		J	70 1	33	
Additional requirements for Uprating for determining MAOP, testing within bulk loading facility, an intrastate transmission pressure testing plan must be developed and submitted Requires test pressure for transmission pipelines be maintained for a period of 24hrs, requires specified time period for pressure testing, requires independent witness of test, increased frequency, requires hydrotest or replacement of all intrastate transmission pipelines (no grandfathering), requires calibrated insturments for pressure testing			1	1	1 2			1					ı		1	4	1		1				1	3	1												1			15	10
Requires Pressure Testing to more than 50% for certain operating pressures or more stringent minimums, All service lines must be pressure tested to at least 90 psig, No Pressure Testing allowed against a live operational valve											1					1	2							1												Г			3	9	6
Operating Pressure			П			П			П		П					П				П			П							П					T		\Box	П		42	
More restrictive limits on operating pressure, Max actual operating pressure must be < MAOP (cannot equal), Tag/post pressure reliefs with setpoint and downstream MAOP	1	1					1			2	!		ı				1		1 1			2	1	1					1		1						1		3	19	15
Multiple Pressure Recording Devices required per system, Recording device needs to be portable, Meters cannot be operated above specified % of pressure test							1																									1								2	2
Add 'I reqmts for overpressure protection, more frequent inspection cycles, District Regulator Stations required to be inspected monthly by operator						1											1		1			9		2							1									15	6
Max pressure limit on cast iron pipe						П											1			П																	\Box		1	2	2
Must notify if low-pressure system exceeds 0.5 psi																						1		2															1	4	3
Damage Prevention																				П																	\Box			68	
Enhanced damage prevention requirements for pipeline operators such as: can only be member of single or specified One Call Ctr, must oversee all transmission line excavations and document all findings, extending training to local community colleges, pilot new technologies, transmission line and certain distribution line require enhanced marking and identification at specific locations, must monitor all excavations of sour gas, require pipeline support for deep excavations, on situ inspecions for transmission lines, specific damage prevention requirements for tilling and agricultural activities				1		2			1			2	2				1	1					4													2			3	17	9
Identification tape above trench-installed						1	1								1 1		1						2																	7	6
Tracer wire requirements, RFID Electronic ball requirements	Ц	1	Ш			Ц			Ш		$oxed{\Box}$				1					Ш			1					_	1						4	1	ш		1	6	6
Enhanced public notification and identification rqmts, screening process for one call ticket to reduce structures built on gas facilities, enahnced public awareness for operator's using trenchless methods															1		1		1																	3				6	4
Enforcement authority											1	_ ′	l		1	1		1		Ш		1	1	1					1		1			1						11	11
Geohazard program, enhanced frequency of ROW inspection, Damage prevention performance limits in rates																								1					1							\perp	2		\bot	4	3
Certain CGA best practices required [Locators to be knowledgeable of Trenchless Technology Techniques, Incorporate Trenchless						Ш			2			2	2		1					\sqcup	_										4				4	4	\blacksquare		4	5	3
Locators to be knowledgeated or Irenciness Technology Techniques, metoproate Trenciness techniques into procedures, Trenchless installations per GPTC Appendix G-192-6, requires test holes for all HDDs, exposure or instrumen required for HDD, facility protection required for shallow mains or transmission lines, mandatory exposure of foreign utilities when in close proximity to trenchless installations															2			1					4													2				9	4
Locators to be Trained to a minimum requirement (NULCA or equiv), Limits Locators to in house (no outside contractors), locators must be qualified to CGA BP guidelines				1																		2																		3	2

State Pipeline Safety Initiatives that Exceed Federal Code	ALAB,	ARIZONA ARKANSAS PSC		CALIFORNIA PUC	COLORADO	CONNECTICUT	DISTRICT OF COLUMBIA DELAWARE		GEORGIA	IDAHO ILLINOIS	INDIANA	IOWA Kansas			MAINE MARYLAND		MICHIGAN	MINNESOTA	MISSOURI		NEBRASKA NEVADA			NEW YORK	NORTH CAROLINA		OHIO OKLAHOMA	OREGON	PENNSYLVANIA	_ ≃						VIRGINIA WASHINGTON		WISCONSIN	WYOMING	Number of Intitiatives in Subcategory	Number of States with Intitiatives in Subcategory
Number of State Initiatives	17 3	34 51	5	50 1	2 10	38	19 5	48	13 5	5 17	22	13 66	5 8	8 7	76 12	54	71	30 (5 73	2 1	11 8	126	85 8	72	17	0 1	5 8	9	17 (0 21	1 19	0 1	11 5	2 0	8 6	3 70	5	75	12	1477	
Training/Quals (not including OQ)																																								14	
Leak Surveys need Trained Personnel regarding equipment and Classification Procedures, Training Required for External First Responders, for all opeartions of sour gas including employees affect, for Flow Reduction or Flow Interruption during Emergency, and for Vegetation Management Leak Surveys		1										1					1						1												1					5	5
Exams/training rqmts for system managers, enhanced training program required, Written Emergency Plan must have provisions for installation and blasting that include PPE for workers and knowledge of state damage prev laws, Certification/extra training/including more frequent for polyethylene/plastic, requires locators be trained in trenchless installations and monitoring techniques/enhanced provisions for qualifications for plastic fusions	:								1	1		2	!	2	2				1					1	1															9	7
Operator Qualification																																								18	
Additional Knowledge/Skill/Ability Demonstration, AOCs must be covered task specific, covered task must include SCADA and telemetry, covered task must include customer meter surveillance, specific covered tasks must include vault inspections												1							1			1													2					5	4
OQ evaluation must include training, Additonal Requirements for OQ Traniners and Evaluators, OJT methodology required to be documented												1			1				2								1													5	4
OQ extended to cover construction, OQ covered task required for CNG transfers, OQ evaluation frenquencies capped				1				1							1				1			2												П	1	1				8	7
Meter Location/Protection																																					П			37	
Meters/regulators must be outside (unless impractical)																	1			П				1					1		1									4	4
Physical protection for meters										1								1					1	1											1	1				6	6
Residential services must be near bldg walls; no downstream buried pipe except outdoor services, Relocating meters from property line to building wall						1				1					1 2							1												П		1				7	6
Customer Meters must be protected from snow and ice damage, other hazards										1	1				1			1				2															П			6	5
Master Meters no longer allowed		1		1		1		1				1			1							1	1	1																9	9
Meters must be replaced every 10 years, 7 years																1							1																	2	2
Operator responsible for service lines regardless of meter location														-	1				1			1																		3	3
Odorant																																								44	
Increased testing frequency of odorant		1				1		1				1	1	1 '	1				2			1	2										2	2		1				15	12
Odorant tests locations specified at furtherest point from source		1												1								2													1					5	4
Lower limit for odorant, Limit for odorant throughout system												1			1	1							1	1										Ш						5	5
All intrastate lines must be odorized, Odorant requirment for transmission line			Ш			Ш		1								Ш			1																	1				3	3
Prompt action for insufficient odorization												1	Ш			Ш						1	1	1				Ш						Ш		1	Ш			5	5
Equipment requirements																Ш						1	2										1	1						4	3
Farm tap requirements	\sqcup	1		\perp							\sqcup		\sqcup			Ш				\perp												\sqcup	1	1			Ш			2	2
More specific reporting including locations, odorant types, and insufficient odorization level																Ш							2														1			3	2
Increased testing requirements of Odorant for Master Meter Operators		1						1			1	1				1						1		1							1	1 1		1 1						2	2

State Pipeline Safety Initiatives that Exceed Federal Code	ALAB,	ARIZONA ARKANSAS PSC	ARKANSAS OIL & GAS CALIFORNIA PUC	CALIFORNIA SFM	COLORADO CONNECTICUT	DISTRICT OF COLUMBIA	DELAWARE	GEORGIA	IDAHO	INDIANA	IOWA KANSAS	KENTUCKY	LOUISIANA MAINE				MISSISSIPPI	MISSOURI		NEVADA	NEW HAMPSHIRE	NEW JERSEY	NEW YORK	NORTH CAROLINA	NORTH DAKOTA	ОНІО ОКLAHOMA			PUERTO RICO RHODE ISLAND	SOUTH CAROLINA	SOUTH DAKOTA	TEXAS			VIRGINIA WASHINGTON		WISCONSIN	WYOMING	Number of Intitiatives in Subcategory	Number of States with Intitiatives in Subcategory
Number of State Initiatives	17 34	4 51	5 50	12	10 38	19	5 48	13	5 17	22 1	3 66	8	3 76	12 5	54 7	1 30	6	73	2 11	8	126	85 8	72	17	0 1	5 8	9	17 (0 21	19	0 1	1 52	0 8	8 6	3 70) 5	75	12	1477	
Leak Tests		\perp		\sqcup		Ш	4	$\perp \perp$			4					4	ш																	4	4		\rightarrow		83	
Define Business District, Define Impractical to survey, Define High Occupancy Structure										1	1		1		1						1														2	,	.		7	6
Additional surveys for Public Buildings inside and out, additional surveys for mains on										H	Ť		Ť																						Ť					Ü
structures (bridges)		\perp	1	\sqcup		1	4	$\perp \perp$			4		1		1	4	ш				2													4	4		1		7	6
Enhanced Leak test requirements services- frequency, Enhanced Leak test requirements mains- frequency, GPS required with leak investigation techniques						1					1				1			1												1					1 2		3		11	8
Enhanced Leak test requirements mains: -requires higher frequency, apply to Master Meter Operators, apply to LPG Operators, maps identifying business districts used for leak surveys		2									1		1	1 :	2 1	1				1	1																2		12	9
Increased patrol frequency for mains/feeders, Risk-based model for survey frequency											1				2	2		1														1							5	4
Leak check for customer lines (on startup), Test subsurface atmosphere with gas detection equipment at customer premises		1						Ш	1	1	1			1	1	1		1																			1		8	8
Flame ionization surveys of bare steel mains if electrical survey impractical (defined)											1												1																2	2
Leak Test Procedure must ensure discovery of leaks, Vegetation Surveys prohibited as leak survey for all pipelines, qe plan for leak surveys		1																												1				1	1		1		4	4
Additional Leak Test on Services after 3rd Party Damage																		1																	1				2	2
Additional Leak Test required where 3rd Party Excavations near pipeline such as under pavement, road substructures																																			2				2	1
Enhanced leak test rqmts - pressure/duration		1		1											1	1																				Ш			3	3
Additional surveys - cast iron (winter and non winter), required for new, repaired or replaced pipeline after backfilling						1					2		1								1							1							1		1		8	7
Acceptable test equipment specified and calibration requirements		2					1	$\perp \perp$		Ш	1		1	1	1		Ш			Ш		1												\perp		Ш	1		9	8
Repair all leaks found in uprating tests, permanent repairs of hazardous leaks, Test and repair all leaks before operating >30% SMYS															1 2	2																							3	2
Response to Leaks																	$\perp I$			Ш																$oldsymbol{ol}}}}}}}}}}}}}}}}}}}}}$			58	
Classification/repair rqmts for leaks, Address class B or Class 2 more frequently	1	1 2	1				1 1	1		1	1		1		3	3		1			2	1 1	1			1				1	1	1			1				24	20
All leaks treated as emergency, Class 1 Leaks require notification to local Fire Dept							1				1		1		1	1				П		1	1	1								1			1		ιТ		9	9
All leaks treated as failure including root cause determination																																							0	0
Specified Time Frame to respond to reports of leaks		2	1		1					1	1 1				Ι			1			1		1		I				1		I	1		I					12	11
Leak inventory limits					1												Ш			Ш	1		1													$4\Box$			3	3
Upgrading/Downgrading of Leaks Prohibited or Restricted		\perp				Ш		$\perp \perp$		Ш			1				Ш	1		Ш	2		1												1	Ш			6	5
After Repair of Leaks Post Survey Required													1								2		1																4	3

		ARIZONA ARKANSAS PSC	ARKANSAS OIL & GAS	IA PUC	CALIFORNIA SFM COLORADO	cur	OF COLUMBIA	2						,		Q	SETTS	;	· =				PSHIRE	EY		NORTH CAROLINA	IKOTA	A		ANIA	AND	ROLINA	KOTA E				ron	GINIA	z		Number of Intitiatives in Subcategory	Number of States with Intitiatives in Subcategory
State Pipeline Safety Initiatives that Exceed Federal Code	3AMA	ARIZONA ARKANSAS	ANSA	FORN	FORN RAD	VECTI	RICT	IWAK	FLURIDA	νно	SIONI	DIANA	KANSAS	KENTUCKY	LOUISIANA MAINE	MARYLAND	SACHU	MICHIGAN	MISSISSIPPI	OURI	MONTANA	NEVADA	NEW HAMPS	VEW JERSEY	NEW YORK	гн са	IH D	CLAHOMA	OREGON	PENNSYLVANI	DEISI	отн сак	SOUTH DA	SI		VERMONT	HING	EST VIR	WISCONSIN		ber ol atego	ber of atives
Exceed Federal Code	ALAI	ARIZ ARK	ARK	CALI	CALI	CONI	DIST	ner's		≘	▤	<u> </u>								MISS	MON	NEV,				NOR	NORTH	Ö				S	ಜ ⊑		_ ,	VER	WAS	WES	WISC		Num Subc	Num Intiti
Number of State Initiatives	17 3	34 51	5	50 1	12 10	38	19 5	48	3 13	5	17 2	2 13	66	8	8 76	12	54 7	1 30	6	73	2 11	8	126 8	85 8	72	17	0 15	8	9	17 0	21	19	0 11	52	0 8	8 63	70	5	75 12	2 14	477	
Replacement Programs																			Ш																ightharpoonup	丄	<u> </u>				63	
Cast/bare steel replacement programs (rate relief), State regulation requires replacing CI and limits new installation of CI, WI, BS		1				1			1			1	1				1	1									1		1	1	1			1	Ш				1		13	13
CI/bare steel/copper replacement program (no rate adder)			Ш															1 1	\perp	1				2							\perp		1		ightharpoonup	2	<u> </u>				9	7
CI replacment when encroched by outside construction activities																	1			2			1		2										Ш						6	4
Risk-based plan for pipe replacement, Service Replacement resulting from low pressure, flow restrictions, freezing, Replace mains that have been subject to flooding or obsolete regulators, replace facilities under buildings											1		1							1					1						1				Ш	1					6	6
Replacement program for Sour Gas Segments and Remedial Measures																	- ;	3																	Ш						3	1
Fitting Replacement Program or requirements	Ш		Ш													Ш			\perp						\sqcup		\perp				\perp			3	ightharpoonup	\bot	'	\sqcup	\bot		3	1
Mandated Accelerated main replacement resulting from inadequate system pressure levels or other customer complaints or minimum wall thickness Plastic replacement program - response to issues, repair inadequate plastic pipe found during													1					1				1																			3	3
maintenance										Ш		1	1					1	\perp	2	1	1													\perp	\bot	'				7	6
Entire CI/bare steel replacement completed for one or more operators							_		_			1	1		_				Ш	1			1					_							4	4	1		1	4	6	6
Relocate/Replace Inside Meters to Outside Meters																		1 1	Ш												1				ightharpoonup	丄	<u> </u>				3	3
Set Criteria for Encapsalation of Joint Leaks as Repair Method, Cast Iron sampling rqmt with replace criteria													1					1	Ш												1				Ш						3	3
Replacing customer-owned yard lines and private lines from master meters					_								1						\perp								_								\vdash	_					1	1
Authority Beyond OPS (not rate) [Authority to order change in public interest, assessments, compliance with state statutes,				_			_			Н	4	+				Н			+	_								╄							\vdash	4	4		_	4	50	
inferior components of affiliate company not allowed, maintain liasison with public works directors, mobile LNG facilities must be addressed in 192 O&M, authority to replace operator with alternate utility during emergencies.		1		2		4	1	1				1					1																								11	7
Encourage safety enhancement through rate cases						1							1				1		\Box				1		1					1	1					1					8	8
Red Tag/Reconnect Service Procedure required for customer appliances, NFPA 54 conformance required before gas provided			П			1		1		П					1				П						1	1		1			1		1				\Box		3	T	11	9
Sour Gas Scope and Authority																		2																							2	1
All pipelines in State Waters (off shore) subject to regulations. Certain interstate operators subject to State Safety Regs, prohibits public from building in pipeline ROW or impair access or visually shield pipelines in easements					1												1									1								2							5	4
Gathering Line Rquirements for Type A, B, C, Gathering Lines not subject to 192 must report incidents, Gathering Lines are from first point of measurement, gathering lines must conform to construction requirements					1													1									3	1						2							8	5
Requires Assistance from non operators in disseminating public awareness plans and materials, Modify State building code to prevent pipeline and sewer interference, requires PE for certain activities.									1							1	1																			2					5	4
Extending LDC Responsibility																																									28	
Public Awareness Plans must include messages to end use customers of customer responsibilities for downstream piping and appliances and reporting gas leaks, notifications to customers relocating within operators districts, Operator required to respond to other							,													•				•																		
operator emergencies if in same county	\vdash						1		1		4	+		\vdash	1			1		2				3		_	_									1	+		\rightarrow		8	5
Jurisdiction extended beyond meter Extended LDC responsibility for service lines or master meter operations, New Master Meter	H		Н	+		H	+			Н	1			+	+		+	1	\forall				-	+		\dashv				+		-	+		-	1	+	H	+	+	3	3
Operator System must be reviewed/certified by LDC		1								1	1									1					1		1	L		1				1	النا	1	⊥ ′	Ш	1		10	10
Maintenance responsibility for buried customer lines, residential methane detector program												1	1												2																4	3
Operator owns service lines regardless of meter location, requires operator must make reasonable accommodations for foreign utility access to adjacent facilities															1										1				1						ıΙ						3	3

		PSC	OIL & GAS	SFM	COLORADO CONNECTICUT	? COLUMBIA									State	ELIS					30		0		DLINA OTA			NIA	0.	.ND J.INA	DTA					NI A			ntitiatives in	tates with n Subcategory
State Pipeline Safety Initiatives that Exceed Federal Code	AMA	ARIZONA ARKANSAS PSC	ARKANSAS OIL &	ORNIA	RADO	ICT OF	DELAWARE	V DA	ela S	SIC	NA	S	KENTUCKY	(1)	MARYLAND	MASSACHUS	MINNESOTA	SSIPPI	MONTANA	ASKA	DA	NEW JERSEY	IEW MEXICO	NEW YORK	NORTH CAROLIN NORTH DAKOTA		ЖТАНОМА	DN SYLVAI	PUERTO RICO	E ISLA H CARG	SOUTH DAKO	ESSEE		ONT	NIA	ASHINGTO EST VIRGI	NISNO	YOMING	Number of Int Subcategory	Number of State Intitiatives in St
Exceed Federal Code	(LAB)	ARIZONA ARKANSA!	IRKA	ALIF	OLO	ISTR	ELA	FLORIDA	иеокыл IDAHO	ILLINOIS	NDIANA OWA	KANSAS	ŒNTI	MAINE	AARY	AASS.	I N	AISSI	MONT	EBR	NEVADA	EW)	IEW I	IEW	ORT	OHIO	KLA	OREGON PENNSYLA	UER	GOH3	110	TENNES	тан	/ERMONT	IRGINIA	VASH VEST	VISCO	VYON	lumb ubca	lumb ntitia
Number of State Initiatives	17 3		5 5	0 12	10 38	19	5										30										<u> </u>			21 19	9 0 1	11 50			63 7	0 5	75		477	2 =
External/Internal Corrosion			-			1	_		-	1		1		1.0			1	-				100		1					Ť				Ť	Ť		-			12	
Sour Gas Analysis and Monitoring Intervals			1													2		_									_					_		_		_			3	2
Pipe-Type & Bottle-Type Holders: Plan For Inspection and Testing			- 4																+													+		+					4	1
90 days to remediate, remidate Atmospheric within 12 months						П		1				\Box	1					1	\top		1											\top		\neg	•	1			5	5
Cathodic Protection																											T												45	
Enhanced CP criteria, repair times, specific cathodic protection requirements		1				1	-	10				2						2						1								8	3	\neg	4	1	1		31	10
Corrosive environment presumed						Ħ						1						2														1			Ť				4	3
Corrosive Gas defined, active corrosion deinition include deterioratin of pipe, periodic reports specified or defined																																2							2	1
Requirements for Cathodic Protection near Power Transmission Lines, Bare Steel Services must have Close Interval Survey												1																											1	1
Shorter Intervals for Cathodic Protection Testing, Readings req'd on all exposed pipe uncoated												1						2	!			1		1								1				1			7	6
Design/Install Requirements						Ш																																	205	
Gas Compressor Stations Start Up/Shut Down Procedures and Maintenace Porcedures, gas compressor station fuel storage requirements, gas compressor station design requirments																1																					2		3	2
Purging Restrictions in confined space, purging procedure for sour gas, purging per AGA PPP 2001																1					1																1		3	3
More restrictive joint requirements, copper joints require specific joining and material requirments		4												1		1								1													2		9	5
Specified welding standards, welder qualifications, weld inspections	·	1						2							2	2 6					5	1		3													1		21	8
Calibrated equipment required to inspect for coating damage prior to install, equipment accuracy requirements for pressure and flow																					2	1		1															4	3
Only 0.32 design factor allowed for plastic (not 0.40), design limitations thermoplastic wall thickness, plastic must be less than 100 psig, plastic service installed to limit shear and tensile stress, minium wall thickness for plastic service														1	1	1		3																					5	3
Above ground transmission pipeline is prohibited for class 2,3,4 locations, sour gas pipelines prohibited from Class 3 or 4 unless authorized												1				1																							2	2
Installation requirements for plastic pipe, all plastic fittings must meet ASTM D2513 Category 1, ASTM D2513 1995 edition for temps greater than 100 Deg, fusion machines must be GPS and barcode capable		3 5						1																1								1			2				13	6
New pipe only steel and polyethylene, steel for any pressure >100 psi, bedding and backfill requirements, specifed material considerations for steel pipe, Restriction on Cast Iron Installations less than 4" diameter mains		2			1		1											1																		1	4		10	6
40" or 48" depth of cover in agricultural areas, sour gas pipelines, 48 inches for transmission pipelines											1					1						1		1															4	4
Mains in public ROW must have 36 in cover, 30 in cover, shallow mains requires state approval, remediate shallow mains														1	3	3						2													1				7	4
Services in public ROW must have 30 in cover, all services must have 18 in cover, More Specific Farm Tap Requirments, service must be inspected during construction													1	1				1			1	2																	6	5
Interstate Pipelines including services must have > 24 in cover														1								1																	2	2
Requires gas pipelines to cross over rather than under for interfering facilities, installation requirements for continous bedding and avoiding kinking and permanent bending, steel pipe installation restrictions to limit gouges														1							2																3		6	3.
All Regulators including service regulators must be vented outside, breather type vents on service regulators above flooding potential, vents require weather proof heads with cross sectional area specified		1																																			3		4	2
Service Regulators cannot supply more than 2 psig to customers, service regulators to be inspected upon meter changeout, service regulators must be 3 ft from source ignition, dispersion testing program service regulator must prevent overpressurization, Service Regulators cannot be direct buried		1			2									1							1														1		1		7	6

State Pipeline Safety Initiatives that Exceed Federal Code		ARIZONA ARKANSAS PSC	ARKANSAS OIL & GAS	CALIFORNIA PUC	CALIFORNIA SFM	CONNECTICUT	DISTRICT OF COLUMBIA	DELAWARE	FLORIDA	GEORGIA	ILLINOIS		IOWA	KANSAS KENTUCKY			MARYLAND		MICHIGAN		MISSOURI	MONTANA	NEVADA			NEW MEXICO NEW YORK	NORTH CAROLINA	NORTH DAKOTA	ОНІО	•	OREGON	<u> </u>	~	٠,	S	TENNESSEE			VIRGINIA		3	WISCONSIN	WYOMING	Number of Intitiatives in Subcategory		Number of States with Intitiatives in Subcategory
Number of State Initiatives	17 3	84 51	5	50	12 10	38	19	5	48 1	13 5	17	22	13 6	66 8	8	76	12 5	4 7	1 30	6	73	2 1	1 8	126	85	8 72	17	0	15	8 (9 17	7 0	21	19	0 1	1 5	2 0	8	63	70	5	75	12	1477	7	
Specified separation from buried electric lines (12 inch, 8 inch), 48 inch separation for sour gas, 12" separation or other precautions for plastic (some states 6" separation)		1		1		1							1			1		1	I					1	1	2					1								1	1		1		14	4	13
Trans. Rqmts apply to all pipe >125 psi in class 3 or 4, all pipelines must meet Class 3 or 4 requirements, all transmission lines must be classified as Class 3 or 4 regardless of location, all sour gas pipelines designed to Class 4 (0.40 factor). More restricve design factors used for liquid pipelines by class location, prohibit composite materials for alt MAOPs, do not adopt Alternative MAOP						1												1 1	ı		1				1	2														1		1		ę	9	8
Mains with MAOP > 200 psig or 125 psig or 250 psig) must meet enhanced design, construction and maintenance requirements																		1							1															1				3	3	3
Inlet AND outlet valves at distribution regulator stations or specified distances from the station, vault design requirements						1			1							2					1					1																3		g	9	6
Adequate over pressure protection required at town border stations and district regulating stations including if pre 1971 installation, relief valve at underground storage field, District Reg Station Fencing Requirements, Vault Requirements																		2	2		1																		1					4	4	3
Device must be installed for monitoring and indicating failure of operating regulator within Over Pressure Protection System, Break out Tank Requirements, revise heater requirement at regulator station																					1			1															1	1		1		Ę	5	5
Directional Drilling requirements, construction requirements to avoid gas/air explosive mixture, joint trenching requirements																		1						1	2														1			1		6	6	5
Identification of facilities required: multiservice installations, meters, district regulator stations, above ground installations									2															2																				4	4	2
Telemetry required at regulator stations serving specified quantity of customers																								1															1			1		3	3	3
Casings prohibited on metal pipelines, casing requirements preventing shearing, Gi-91/0285 Guidelines for Pipelines Crossing Rails and Highways when no casing is used, casing design, API 1102 incorporated, plastic service lines must be encased in vault or pit, closed ends for encased plastic									1								4	4			1																					3		ç	9	4
Does not allow gas lines, haz liq lines under buildings, no concealed copper services and fitting restictions on copper services		1		1					1			П								П	1			1															2			2		ç	9	7
Location restrictions for higher-pressure systems, pipelines must consider overhead electric transmission influence, high consequence areas and easements of hazardous liquid pipeline must be clear of all encroached structures				2															1							1																1		5	5	4
Expanded Incorporation By Reference for Acceptable Engineering Standards: NFPA54 most recent edition, NFPA 59 most recent edition, NFPA 70 edition at time of installation, NBS Method of Gas Testing, NBS Testing Lg Gap Rot Meters, AGA No.3 Orifice Metering, WV Short Course on Practical Methods, National Association of Corrosion Engineers International Standard NACE MR0175/ISO 15156, 2004-2007, Orifice Metering Constructed/Maintained per AGA GMC Rpt #3																		1	ı						1		1				1		2	1										7	7	6
No buried galvanized or aluminum pipe Specific Design Requirements for Pipe Type Holders and Bottle Holders, encourages	•	1		4						1			4					1	l																1	1								2	2	2
removal of BH				6																						1																1		8	8	3
Specifies restoration of agricultural land after installation occurs, protective coating of steel services when boring through rocky soils													1																													1		2	2	2

		550	ARKANSAS PSC ARKANSAS OIL & GAS	IA PUC	CALIFORNIA SFM	CUT	OF COLUMBIA	ш						,	-		D		Ķ	Id		_		PSHIRE EY	00	·	NORTH CAROLINA		М	ANIA	001	CAND	ROLINA	KOTA	2				ron	GINIA			Number of Intitiatives in Subcategory	f States with s in Subcategory
State Pipeline Safety Initiatives that	ALABAMA	ARIZONA	ARKANSAS PSC ARKANSAS OIL	IFORN	FORN	NECTI	FRICT	DELAWARE	FLORIDA	DAHO	SIONIT	IANA	OWA	KENTUCKY	OUISIANA	MAINE	MARYLAND MASSACHUSI	MICHIGAN	MINNESOTA	SISSIP	MISSOURI	RASKA	NEVADA	NEW HAMP NEW JERSE	NEW MEXICO	NEW YORK	THCA	0	KLAHOMA	OREGON	JERTO RIC	RHODE ISLA	тн са	SOUTH DA	AS	Ξ	/ERMONT	IRGINIA	HING	EST VIRG	YOMING		iber of	Number of Sta
Exceed Federal Code					CALL	CON	DIST		E 6	; =											MON	NEB		NEW NEW	NEW	NEW	NOR	ОНІО	5	0 4								>	3	≥ ≥	: ≥			Num
Number of State Initiatives	17	34 5	1 5	50	12 10	38	19	5 4	8 13	3 5	17	22 1	3 66	6 8	8	76 1	2 54	71	30	6 73	3 2	11	8 12	6 85	8	72 1	7 0	15	8	9 17	7 0	21	19	0 1:	1 52	0	8	63	70 5	5 7	5 12	2 1	1477	
Risk-based approaches Requires automated platform to capture high quality and accurate facility data, Requires customer meter surveillance program with DIMP																																						2					24	1
Inline inspections required to reveal cross bore of sewer laterals	П			П			7				П				П		T		1	\top									7			П				П	\neg	2		\top	\top	\top	3	2
Base line and trending of cast iron and bares steel, non hazardous leaks, steel service line repair analysis and requiremnt, risl assessments required for underground gas storage facilities				1																															2			2					5	3
Operators required to perform integrity assessments of entire line section, temporary and permanent repairs based on inspections to reveal defects, gouges, dents or leaks, requires operator determination of plant replacement based on operator inspections, risk based alternatives approaches for pressure testing not allowed on liquid lines, liquidlines leak detection for integrity performed under specified flow conditions, requires use of best available technology in risk determinations for haz liquid pipelines, Method 2 prohibited for MCA_6 for earlies includions.				1	1										1												1								2				1				8	7
Annual eval of bare/cast, Annual evaluation of threats/risks, service riser evaluations that are prone to leaks, inactive services must be included in DIMP	1												3	3									1												1								6	4
Enhanced Record Keeping																																				П					\top		100	
OQ must cross reference with O&M and Emergency Plan, requirement for Security Plan																1							1																				2	2
Maintain Records of Abandon Mains or facilities after a given date	1					1										1					Ш		1													Ш		1			\perp		5	5
More stringent data elements such as Test Pressures, Duration of Strength Test, Date, Description of Facilities, retention of pressure charts, testing services in equivalent manner as mains with associated records													1					1		1			2				1												1		1		8	7
Regulator & Relief Valve Calcs required of all OPP devices													1								Ш					1										Ш					\perp		2	2
All Records must be kept InState or accessible instate, requires detailed record keeping of outages, all records must be available for life of pipeline, Lifetime Records requirement for all Public Outreach, enhanced record keeping for gas and hazardous liquid near schools, material tracking and traceability requirements				1					1		1					2							1				1	1				1	1	1	2								13	11
Odorometer Records must be kept for specified duration, odorant records include sampling and odorant quantities used													1			1		1					2														П		1				6	5
Leak Survey Records or Leak Investigation Records required for longer than 5 years							1	1	1				1				1			1																			1				7	7
Lifetime Records requirement for Corrosion Control of all Pipelines		2	2	П																																			1				3	2
Lifetime Records requirement for Strength Testing of all Pipelines				Ш					1				1										1			1										Ш			1				5	5
Lifetime Records requirement for Welding of all Pipelines, Welding Records must be at job site									1									1																									2	2
All Key Valves or Critical Valves must be identified on Records/Maps, location records required for shallow pipelines and protective device		1	1						1														1			2												1					6	5
Enhanced Corrosion Records such as documentation of corrosion areas, active corrosion, schedules of placement of cathodic protection devices, maps and records of cathodic protection devices		1	1										1							1															3								6	4
Enhanced Meter Record Details Required (Capacity, Purchase Date, Type, Location, Pressure Rating, Accuracy Etc.)														1			1															1	1								1		5	5
Maintain Calibration Records and Identification of Equipment for specified duration													Ι																					I		П	J		1		1		2	2
Leak Progression Maps must be updated and maintained (or reported)																1							1																				2	2
Investigate and Maintain Records of all Leaks as Failures, detailed leak reporting including cause, Records shall be kept as to leak complaints and remediation of leaks									1				1					1					1													\prod				1			5	5
O&M must include updates based on past violations, thorough and complete records review requirements																																						2					2	1
GPS Coordinates required to be taken on exposed main, tees, valves, etc	Ш			Ш		Ш					Ш					1					Ш		1					Ш				Ш				Ш	┙						2	2
Detailed Mapping Requirements, GIS Mapping Required		4	1	1					1	3		1	1							1										1		1	1				1				1		17	12

State Pipeline Safety Initiatives that Exceed Federal Code	ALABAMA	ARIZONA	ARKANSAS	ARKANSAS OIL & GAS CALIFORNIA PUC	CALIFORNIA SFM	8	CONNECTION DISTRICT OF COLUMBIA	DELAWARE	FLC	GEORGIA	ILLINOIS	INDIANA	IOWA KANSAS		LOUISIANA		MASSACHUSETTS		MISSISSIPPI	MISSOURI MONTANA	NEBRASKA	NEVADA	NEW HAMPSHIRE	NEW JERSEY NEW MEXICO	NEW YORK	NORTH CAROLINA	OHIO		OREGON	PENNSYLVANIA PITEPTO PICO	RHODE ISLAND	S	SOUTH DAKOTA TENNESSEE	TEXAS	ОТАН	VIBGINIA	WASHINGTON	WESTVIRGINIA	WYOMING		Number of Intitiatives in Subcategory	Number of States with Intitiatives in Subcategory
Number of State Initiatives	17	34	51 5	5 50	12	10 3	8 19	5	48	13 5	17	22	13 66	6 8	8 7	6 12	54 7	1 30	6 7	73 2	11	8 1	126 8	85 8	72	17 0	15	8	9 1	17 0	21	19	0 11	52	0 8	63	70	5 7	5 12		477	
Inactive Services		П																																							19	
Requirement to cut inactive services off at main during demolition															1										1																2	- 2
Deadline requirement to cut inactive services off at main or meters after specified time period	4	1					1		1					П	1		2						1							1	1	1			1	1			1		17	1
Stronger Enforcement Penalties																																									6	
Civil penaltes applied can exceed federal maximum penalty	П			1								П		П			1					П		П	4			П			П			П							6	
State Inspection Programs																																									56	
Ability to Use Outside Consultants for State led inspections when necessary, State to maintain GIS database of haz liquid pipeline operators and historical activities							1											1																							2	
Inspections focused by risk					1							1						1											1				1	1			1				7	
More frequent inspections/ contact/detailed audits	1	1	1	1	1	1 1	1 1	1	1	1 1	1	1	1 1	2	1	1	1 1	1	1	1 1	1	1	1 1	1 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1 1		47	4
																																									177	
Number of State Initiatives	17	34	51 5	5 50	12	10 3	8 19	5	48	13 5	17	22	13 66	5 8	8 7	6 12	54 7	1 30	6 7	73 2	11	8 1	126 8	85 8	72	17 (15	8	9 1	17 0	21	19	0 11	52	0 8	63	70	5 7	5 12	1	477	