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**Thermal Mark Patterns Applied to Salmon from Alaska, Washington, Treaty Tribes and Other Northwest States for Brood Year 2005**

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## **Abstract**

In Washington and Alaska, mass-marking of salmon using otolith thermal marking is an effective research and management tool for a variety of situations. The specific needs and applications for marking, however, are not same in each state. This document contains a report of thermal mark patterns applied to salmon stocks from the 2005 brood year. It includes release numbers where known and mark patterns applied in Alaska, Washington, Oregon, Idaho and by Treaty Tribes.

## **Summary of Alaska Thermal Marking Programs**

In Alaska, thermal marking is primarily used to provide information about the contribution of hatchery fish, primarily pink, chum and sockeye salmon, to commercial and cost-recovery fisheries during the summer fishing season. In addition, several on-going programs use this information to aid in the in-season management of mixed stock fisheries. Hatcheries use mark recovery data to evaluate the success of various release strategies. In research applications, thermal marks have been used to answer questions regarding lake survival and straying rates of returning adults. The presence of otolith thermal marks is also being used to determine the origin of juvenile and immature salmon collected during biotic surveys in the Gulf of Alaska and the Bering Sea. In many instances, thermal marks are being applied by hatcheries in the absence of a directed sampling program. This applies primarily to coho and chinook salmon, but it includes some sockeye releases as well. The reasons for this vary, but it primarily occurs in situations where the marks cost little to apply, and there is anticipation that a thermal mark recovery program will be implemented by the time the fish return.

Thermal mark patterns are assigned annually by the Alaska Department of Fish and Game with consideration based on the constraints of the hatchery, the need to identify specific stocks, and the existence of a program to recover and identify the thermal patterns. It has become increasingly difficult to create and apply unique patterns as the hatchery marking programs have expanded. Consequently, alternative marking strategies, such as the use of strontium chloride, are currently being explored.

A list of thermal marks applied to hatchery-reared salmon during brood year 2005 is provided in Table 1. Although final release estimates have not been reported by all the hatchery operations as of this date, there are a total of #78 different mark groups. To date, more than #1.4 billion marked fish have been released.

The otolith pattern is presented both as the RBr notation (Munk and Geiger 1998) with slight modifications by Hagen (1999), as well as the equivalent Hatch Notation. The Hatch Notation is similar to the RBr code in that thermal rings are grouped into bands of rings that are evenly spaced. The primary difference is that the hatch event is denoted with an 'H,' and the position of the 'H' in the code indicates what rings are formed pre- or post-hatch. Both notations are shown as well as a graphic representation of the mark.

Information regarding thermal marked patterns and numbers of released fish in Alaska is available from the Alaska Department of Fish and Game, Mark, Tag and Age Laboratory

database and from the NPAFC Working Group on Salmon Marking's Website (<http://npafc.taglab.org>).

### **Summary of Otolith Thermal Marking Projects by The Washington State Department of Fish and Wildlife, Northwest Treaty Tribes and other Western States.**

In Washington State, mass-marking of hatchery salmon with thermally-induced otolith marks (Volk et al. 1999) is primarily used as an evaluation and research tool where identification of hatchery fish at various life history stages is important. Projects range widely in scope and magnitude, including evaluation of supplementation efforts for stock recovery, assessment of survival rates for different hatchery release strategies, determination of hatchery stray rates and evaluating impacts of hatchery programs on wild stocks. On a more limited scale, thermal marking is also used as an aid to pre-season and in-season management of near-terminal fisheries. WDF&W often acts as a consultant to other western U.S. fisheries agencies using otolith thermal marking. Where information is available, these projects are included in this summary.

A summary of otolith thermal marks applied to BY2005 salmon in Washington State (WDF&W and State treaty tribes), Oregon and other western states is presented in Table 2. More than 57 million juvenile salmon were mass-marked with thermally-induced patterns. Because the large majority of these projects are focused upon evaluation or research objectives, it is typical to have unique identifiers for many groups within a single stock. Similarly, because marks in these studies are typically recovered from juveniles or adults in or near their river of origin, duplicate marks between stocks are not a large problem and redundancy of marks between stocks occurs. If possible, this duplication was avoided.

A growing use of otolith thermal marking in Washington is for evaluating the success of stock recovery efforts, particularly with chum and coho salmon. In many of these cases, eyed-eggs are placed in remote site incubators for volitional exit and thermal marking is the only way to place an identifier on these groups. Another growing application of thermal marking in Washington is to evaluate the impact of hatchery fish on wild fish in natural spawning areas. Nearly all thermal-marking efforts are conducted by chilling ambient incubation water and patterns are typically created using a modified bar code symbology (Volk et al. 1994). Pre-hatch marks are often used as brood year identifiers. The large diversity of marking site attributes among these efforts has demanded innovation and adaptation to achieve the required temperature differences to mark fish. In Table 2, the BY2005 mark patterns are represented as a schematic of thermal events. For consistency, these patterns are also described according to the Hatch Code scheme.

We expect that thermal marking efforts will continue at a similar or slightly increased level next year. However, there is a possibility that in the near future, thermal marking may expand significantly in Washington State and Oregon as pressure mounts to unequivocally identify hatchery fish amidst concern over declining wild stocks.

## References

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- Volk, E.C., S.L. Schroder, J.J. Grimm and H.S. Ackley. 1994. Use of a bar code symbology to produce multiple thermally induced marks. *Trans. Am. Fish. Soc.* 123:811-816.
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Table 1. Summary of thermal mark codes to be applied to Alaska hatchery salmon in brood year 2005.

SPECIES: CHINOOK

ID#	MARK TYPE	BROOD YEAR	RELEASE YEAR	DATE LAST RELEASED	SPECIES	STATE/ PROVINCE	REGION RELEASE	AGENCY	FACILITY	STOCK
AK05-80	TM	2005	2006	6/15/2006	Chinook	Alaska	Southcentral	ASLC	Alaska Sealife Center	Ship Creek
AK05-01	TM	2005	2007		Chinook	Alaska	Southcentral	ADFG	Fort Richardson Hatchery	Ship Creek
AK05-02	TM	2005	2007		Chinook	Alaska	Southcentral	ADFG	Fort Richardson Hatchery	Deception Creek
AK05-03	TM	2005	2007		Chinook	Alaska	Southcentral	ADFG	Fort Richardson Hatchery	Crooked Creek
AK05-04	TM	2005	2007		Chinook	Alaska	Southcentral	SSLC	Seward Sealife Center	Resurrection Bay
AK05-07	TM	2005	2006		Chinook	Alaska	Southeast	NSRAA	Medvejie Hatchery	Medvejie
AK05-05	TM	2005	2007		Chinook	Alaska	Southeast	NSRAA	Hidden Falls Hatchery	Hidden Falls
AK05-08	TM	2005	2006	7/17/2006	Chinook	Alaska	Southeast	NSRAA	Medvejie Hatchery	Medvejie
AK05-79	TM	2005	2006	7/11/2006	Chinook	Alaska	Southcentral	ASLC	Alaska Sealife Center	Ship Creek

ID#	MARK NAME	STAGE	WEIGHT	LENGTH	ESIMATED RELEASE	RBr CODE	HATCH CODE	Pre-Hatch Graphic	Post-Hatch Graphic	COMMENTS
AK05-80	SEALIFE05CHINA	Smolt	12.34		45,895	1:1.1,2.6	1,6H			
AK05-01	COOKINLET05CHIN				1,090,000	1:1.2,2.3	2,3H			
AK05-02	PWS05CHIN				315,000	1:1.2,2.4	2,4H			
AK05-03	RESURRECTION05CHIN				105,000	1:1.2,2.5	2,5H			
AK05-04	SEALIFE05CHINC				105,000	1:1.3,2.3,3.1	3,3,1H			
AK05-07	GREENLAKE05CHIN				1,000,000	1:1.3,2.3	3,3H			
AK05-05	HIDDENFALLS05CHIN				1,500,000	1:1.4,2.2	4,2H			
AK05-08	MEDVEJIE05CHIN	Smolt	22.3		933,874	1:1.3,2.1,3.3	3,1,3H			
AK05-79	SEALIFE05CHINB	Smolt	19.24		19,530	1:1.4,2.3	4,3H			

SPECIES: COHO

ID#	MARK TYPE	BROOD YEAR	RELEASE YEAR	DATE LAST RELEASED	SPECIES	STATE/ PROVINCE	REGION RELEASE	AGENCY	FACILITY	STOCK
AK05-32	TM	2005	2007		Coho	Alaska	Southcentral	ADFG	Fort Richardson Hatchery	Ship Creek
AK05-33	TM	2005	2007		Coho	Alaska	Southcentral	ADFG	Fort Richardson Hatchery	Bear Lake
AK05-38	TM	2005	2006		Coho	Alaska	Southcentral	CIAA	Trail Lakes Hatchery	Bear Lake
AK05-39	TM	2005	2006		Coho	Alaska	Southcentral	CIAA	Trail Lakes Hatchery	Bear Lake
AK05-40	TM	2005	2007		Coho	Alaska	Southcentral	PWSAC	Wally H. Noerenberg Hatchery	Wally H. Noerenberg
AK05-86	TM	2005	2006	6/15/2006	Coho	Alaska	Western	NFA	Hobson Creek	Nome River
AK05-88	TM	2005	2005	12/15/2006	Coho	Alaska	Western	NSED	Norton Sound Hatchery	Snake River
AK05-90	TM	2005	2007		Coho	Alaska	Southeast	SSRAA	Burnett Inlet Hatchery	Burnett Inlet
AK05-89	TM	2005	2007		Coho	Alaska	Southeast	SSRAA	Burnett Inlet Hatchery	Burnett Inlet
AK05-87	TM	2005	2006		Coho	Alaska	Southcentral	CIAA	Trail Lakes Hatchery	Bear Lake
AK05-37	TM	2005	2007		Coho	Alaska	Southcentral	VFDA	Solomon Gulch Hatchery	Solomon Gulch

ID#	MARK NAME	STAGE	WEIGHT	LENGTH	ESIMATED RELEASE	RBr CODE	HATCH CODE	Pre-Hatch Graphic	Post-Hatch Graphic	COMMENTS
AK05-32	COOKINLET05COHO				640,000	1:1.1,2.5	1,5H			
AK05-33	RESURRECTION05COHO				240,000	1:1.2,2.4	2,4H			
AK05-38	TRAILLAKES05SMCOHO				450,000	2:1.3,2.3	H3,3			
AK05-39	TRAILLAKES05LGCOHO				150,000	2:1.2,2.2	H2,2			
AK05-40	WHN05COHO				300,000	1:1.3	3H			
AK05-86	NOME05COHO	Emergent Fry			40,000	1:1.2	2H			
AK05-88	NORTON05COHO	Egg			45,786	1:1.2,2.2	2,2H			
AK05-90	BURNETTINLET05COHO					1:1.2,2.1,3.2	2,1,2H			
AK05-89	NECKLAKE05COHO					1:1.1,2.4	1,4H			
AK05-87	TRAILLAKES05AACOHO					2:1.3,2.1	H3,1			
AK05-37	SGH05COHO				1,500,000	1:1.6	6H			Marking problems

Table 1 (continued). Summary of thermal mark codes applied to Alaska hatchery salmon in brood year 2005.

SPECIES: CHUM

ID#	MARK TYPE	BROOD YEAR	RELEASE YEAR	DATE LAST RELEASED	SPECIES	STATE/ PROVINCE	REGION RELEASE	AGENCY	FACILITY	STOCK
AK05-31	TM	2005	2006		Chum	Alaska	Southcentral	PWSAC	Wally H. Noerenberg Hatchery	Wally H. Noerenberg
AK05-30	TM	2005	2006		Chum	Alaska	Southcentral	PWSAC	Wally H. Noerenberg Hatchery	Wally H. Noerenberg
AK05-12	TM	2005	2006	5/30/2006	Chum	Alaska	Southeast	NSRAA	Hidden Falls Hatchery	Hidden Falls
AK05-23	TM	2005	2006	5/11/2006	Chum	Alaska	Southeast	SSRAA	Neets Bay Hatchery	Neets Bay
AK05-21	TM	2005	2006	5/17/2006	Chum	Alaska	Southeast	NSRAA	Medvejie Hatchery	Hidden Falls
AK05-27	TM	2005	2006	4/28/2006	Chum	Alaska	Southeast	SSRAA	Neets Bay Hatchery	Neets Bay
AK05-77	TM	2005	2006		Chum	Alaska	Southeast	KAKE	Gunnuk Creek	Gunnuk Creek
AK05-29	TM	2005	2006		Chum	Alaska	Southcentral	PWSAC	Wally H. Noerenberg Hatchery	Wally H. Noerenberg
AK05-13	TM	2005	2006		Chum	Alaska	Southeast	NSRAA	Hidden Falls Hatchery	Hidden Falls
AK05-26	TM	2005	2006	4/27/2006	Chum	Alaska	Southeast	SSRAA	Neets Bay Hatchery	Neets Bay
AK05-11	TM	2005	2006	5/21/2006	Chum	Alaska	Southeast	NSRAA	Hidden Falls Hatchery	Hidden Falls
AK05-20	TM	2005	2006	4/20/2006	Chum	Alaska	Southeast	NSRAA	Medvejie Hatchery	Hidden Falls
AK05-09	TM	2005	2006	6/15/2006	Chum	Alaska	Western	NFA	Hobson Creek Hatchery	Nome River
AK05-24	TM	2005	2006	4/25/2006	Chum	Alaska	Southeast	SSRAA	Neets Bay Hatchery	Neets Bay
AK05-28	TM	2005	2006	5/9/2006	Chum	Alaska	Southeast	SSRAA	Neets Bay Hatchery	Neets Bay
AK05-10	TM	2005	2006	5/10/2006	Chum	Alaska	Southeast	NSRAA	Herman Creek	Chilkat
AK05-84	TM	2005	2005	11/15/2005	Chum	Alaska	Western	NSED	Norton Sound Hatchery	Snake River
AK05-85	TM	2005	2005	11/15/2005	Chum	Alaska	Western	NSED	Norton Sound Hatchery	Nome River
AK05-83	TM	2005	2006		Chum	Alaska	Southeast	AKI	Port Armstrong Hatchery	Port Armstrong
AK05-82	TM	2005	2006		Chum	Alaska	Southeast	SJ	Sheldon Jackson	Sheldon Jackson
AK05-14	TM	2005	2006	6/12/2006	Chum	Alaska	Southeast	DIPAC	Macaulay Hatchery	Macaulay

ID#	MARK NAME	STAGE	WEIGHT	LENGTH	ESIMATED RELEASE	RBr CODE	HATCH CODE	Pre-Hatch Graphic	Post-Hatch Graphic	COMMENTS
AK05-31	WHN05B				35,000,000	1:1.1,2.2,3.1,4.2	1,2,1,2H	I I I I I I		
AK05-30	PORTCHALMERS05				40,000,000	1:1.1,2.2n,3.3	1,2n,3H	I I I I I I		
AK05-12	HIDDENFALLS05L/LG	Fed Fry	3.3		51,227,178	1:1.1,2.3,3.2,4.1	1,3,2,1H	I I I I I I I		
AK05-23	ANITABAY05	Smolt	3	68	22,500,000	1:1.1,2.3,3.3,4.1	1,3,3,1H	I I I I I I I		
AK05-21	DEEPINLETHF05L/LG	Fed Fry	3.7		6,063,938	1:1.1,2.3,3.3	1,3,3H	I I I I I I I		
AK05-27	NEETSBAY05SUM	Smolt	2.3	61.8	46,300,000	1:1.1,2.4,3.3	1,4,3H	I I I I I I I		
AK05-77	KAKE05					1:1.1,2.5,3.1	1,5,1H	I I I I I I I		
AK05-29	WHN05				75,000,000	1:1.1,2.5	1,5H	I I I I I I I		
AK05-13	TAKATZ05				45,000,000	1:1.3,2.1,3.2,4.1	3,1,2,1H	I I I I I I I		
AK05-26	NAKATINLET05SUM	Smolt	3.3	70	8,410,000	1:1.3,2.2,3.3	3,2,3H	I I I I I I I		
AK05-11	HIDDENFALLS05				34,971,120	1:1.3,2.3,3.1	3,3,1H	I I I I I I I		
AK05-20	DEEPINLETHF05	Fed Fry	2.01		17,182,126	1:1.3n,2.2,3.2n	3n,2,2nH	I I I I I I I		
AK05-09	NOME05CHUM	Emergent Fry			50,000	1:1.2	2H	I I I I I I I		
AK05-24	KENDRICK05	Smolt	2.5	63.5	20,850,000	1:1.4,2.1,3.2,4.1	4,1,2,1H	I I I I I I I		
AK05-28	NEETSBAY05FALL	Smolt	1.9	58	13,550,000	1:1.4,2.1,3.3	4,1,3H	I I I I I I I		
AK05-10	17MILE05				216,840	1:1.4	4H	I I I I I I I		
AK05-84	NORTON05CHUMA	Egg			113,025	1:1.2/2.1	2/1H	I I I I I I I		
AK05-85	NORTON05CHUMB	Egg			80,824	1:1.2/2.2n	2/2nH	I I I I I I I		
AK05-83	PORTARMSTRONG05CHUM					1:1.3	3H	I I I I I I I		
AK05-82	SJ05CHUM					1:1.6,2.1	6,1H	I I I I I I I		
AK05-14	DIPAC05	Fed Fry	5.68	74	97,362,462	1:1.6	6H	I I I I I I I		Previous marks combined

Table 1 (continued). Summary of thermal mark codes to be applied to Alaska hatchery salmon in brood year 2005.

SPECIES: SOCKEYE

ID#	MARK TYPE	BROOD YEAR	RELEASE YEAR	DATE LAST RELEASED	SPECIES	STATE/ PROVINCE	REGION RELEASE	AGENCY	FACILITY	STOCK
AK05-70	TM	2005	2006		Sockeye	Alaska	Southcentral	CIAA	Trail Lakes Hatchery	Bear Lake
AK05-73	TM	2005	2006		Sockeye	Alaska	Southcentral	CIAA	Trail Lakes Hatchery	Hidden Lake
AK05-55	TM	2005	2007		Sockeye	Alaska	Southeast	SSRAA	Burnett Inlet Hatchery	McDonald Lake
AK05-54	TM	2005	2007		Sockeye	Alaska	Southeast	SSRAA	Burnett Inlet Hatchery	McDonald Lake
AK05-58	TM	2005	2007		Sockeye	Alaska	Southcentral	PWSAC	Main Bay Hatchery	Main Bay
AK05-60	TM	2005	2007		Sockeye	Alaska	Southeast	DIPAC	Snettisham Hatchery	Snettisham
AK05-72	TM	2005	2006		Sockeye	Alaska	Southcentral	CIAA	Trail Lakes Hatchery	Hidden Lake
AK05-65	TM	2005	2006	6/7/2006	Sockeye	Alaska	Southeast	DIPAC	Snettisham Hatchery	Tahltan Lake
AK05-67	TM	2005	2006	6/8/2006	Sockeye	Alaska	Southeast	DIPAC	Snettisham Hatchery	Tatsamenie Lake
AK05-66	TM	2005	2006	6/23/2006	Sockeye	Alaska	Southeast	DIPAC	Snettisham Hatchery	Tahltan Lake
AK05-68	TM	2005	2006	6/8/2006	Sockeye	Alaska	Southeast	DIPAC	Snettisham Hatchery	Tatsamenie Lake
AK05-64	TM	2005	2006	6/9/2006	Sockeye	Alaska	Southeast	DIPAC	Snettisham Hatchery	Snettisham
AK05-69	TM	2005	2006		Sockeye	Alaska	Southcentral	CIAA	Trail Lakes Hatchery	Bear Lake
AK05-74	TM	2005	2006		Sockeye	Alaska	Southcentral	CIAA	Trail Lakes Hatchery	Big Lake
AK05-94	TM	2005	2007		Sockeye	Alaska	Southcentral	CIAA	Trail Lakes Hatchery	Big Lake
AK05-93	TM	2005	2006		Sockeye	Alaska	Southcentral	CIAA	Trail Lakes Hatchery	Big Lake
AK05-56	SM	2005	2006		Sockeye	Alaska	Southcentral	PWSAC	Gulkana	Gulkana

ID#	MARK NAME	STAGE	WEIGHT	LENGTH	ESIMATED RELEASE	RBr CODE	HATCH CODE	Pre-Hatch Graphic	Post-Hatch Graphic	COMMENTS
AK05-70	TRAILLAKES05B				700,000	1:1.2,2.1	2,1H			
AK05-73	HIDDENLAKE05				600,000	2:1.2,2.2,3.2	H2,2,2			
AK05-55	NECKLAKE05				500,000	1:1.2,2.6n	2,6nH			
AK05-54	BURNETTINLET05				40,000	1:1.2,2.3n,3.2	2,3n,2H			
AK05-58	MAINBAY05				8,000,000	1:1.3,2.2+3.5	3,2H5			
AK05-60	SPEELARM05				6,000,000	1:1.3,2.4n	3,4nH			
AK05-72	PENINSULA05SOCKEYE				6,000,000	2:1.3,2.1	H3,1			
AK05-65	TAHLTAN05	Emergent Fry	0.14		1,280,322	1:1.4,2.2	4,2H			
AK05-67	TATSAMENIE05S	Emergent Fry	0.18		775,377	1:1.4+2.3	4H3			
AK05-66	TUYA05	Emergent Fry	0.13		2,137,548	1:1.4+2.4	4H4			
AK05-68	TATSAMENIE05N	Emergent Fry	0.17		696,120	1:1.4+2.5	4H5			
AK05-64	SWEETHEART05	Emergent Fry	0.13		240,120	1:1.5,2.2	5,2H			
AK05-69	TRAILLAKES05A				1,000,000	1:1.6	6H			
AK05-74	BIGLAKE05A				1,500,000	2:1.3	H3			
AK05-94	BIGLAKE05B					2:1.2,2.4	H2,4			
AK05-93	BLODGETLAKE05					2:1.6	H5			
AK05-56	GULKANA05				8,000,000	2:1.S1	HS1			

Table 1 (continued). Summary of thermal mark codes to be applied to Alaska hatchery salmon in brood year 2005.

SPECIES: PINK

ID#	MARK TYPE	BROOD YEAR	RELEASE YEAR	DATE LAST RELEASED	SPECIES	STATE/ PROVINCE	REGION RELEASE	AGENCY	FACILITY	STOCK
AK05-44	TM	2005	2006		Pink	Alaska	Southcentral	PWSAC	Cannery Creek Hatchery	Cannery Creek
AK05-46	TM	2005	2006		Pink	Alaska	Southeast	AKI	Port Armstrong Hatchery	Port Armstrong
AK05-47	TM	2005	2006		Pink	Alaska	Southeast	AKI	Port Armstrong Hatchery	Port Armstrong
AK05-49	TM	2005	2006		Pink	Alaska	Southcentral	PGHC	Port Graham	Port Graham
AK05-41	TM	2005	2006		Pink	Alaska	Southcentral	PWSAC	Armin F. Koernig Hatchery	Armin F. Koernig
AK05-42	TM	2005	2006		Pink	Alaska	Southcentral	PWSAC	Armin F. Koernig Hatchery	Armin F. Koernig
AK05-43	TM	2005	2006		Pink	Alaska	Southcentral	PWSAC	Armin F. Koernig Hatchery	Armin F. Koernig
AK05-81	TM	2005	2006		Pink	Alaska	Southeast	SJ	Sheldon Jackson	Sheldon Jackson
AK05-50	TM	2005	2006	5/16/2006	Pink	Alaska	Southcentral	VFDA	Solomon Gulch Hatchery	Solomon Gulch
AK05-51	TM	2005	2006		Pink	Alaska	Southcentral	PWSAC	Wally H. Noerenberg Hatchery	Wally H. Noerenberg
AK05-52	TM	2005	2006		Pink	Alaska	Southcentral	PWSAC	Wally H. Noerenberg Hatchery	Wally H. Noerenberg
AK05-53	TM	2005	2006		Pink	Alaska	Southcentral	PWSAC	Wally H. Noerenberg Hatchery	Wally H. Noerenberg

ID#	MARK NAME	STAGE	WEIGHT	LENGTH	ESIMATED RELEASE	RBr CODE	HATCH CODE	Pre-Hatch Graphic	Post-Hatch Graphic	COMMENTS
AK05-44	CCH05				140,000,000	1:1.3,2.3	3,3H			
AK05-46	PORTARMSTRONG05E				35,000,000	1:1.3	3H			
AK05-47	PORTARMSTRONG05M				35,000,000	1:1.3+2.3	3H3			
AK05-49	PORTGRAHAM05				35,000,000	1:1.4,2.2	4,2H			
AK05-41	AFK05A				50,000,000	1:1.4	4H			
AK05-42	AFK05B				50,000,000	1:1.4+2.3	4H3			
AK05-43	AFK05C				50,000,000	1:1.4+2.5	4H5			
AK05-91	SJ05				100,000	1:1.4,2.1	4,1H			
AK05-50	SGH05	Fed Fry	0.87	47	216,921,213	1:1.6	6H			
AK05-51	WHN05PINKA				40,000,000	1:1.8	8H			
AK05-52	WHN05PINKB				40,000,000	1:1.8+2.3	8H3			
AK05-53	WHN05PINKC				40,000,000	1:1.8+2.5	8H5			